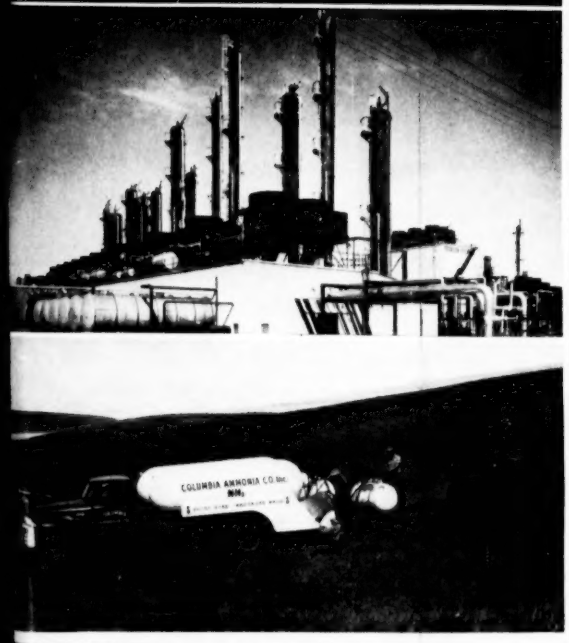
Chemical Week

October 9, 1954 Price 35 cents



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Nashville, Tenn.	62,000	Brick & Concrete	2	320'x 100'	Con. & Wood	Excellent	Yes
Nashville, Tenn.	20,000	Brick & Concrete	4	100'x 50'	Concrete	Excellent	Yes
Nashville, Tenn.	49,000	Frame & M. C.	1	301'x 127'	Wood	Good	Yes
Union City, Tenn.	20,000	Block & Metal	1	200'x 100'	Concrete	Good	No
Somerville, Tenn.	30,000	Block & Brick	1	200'x 150'	(partially complete)		No
McMinnville, Tenn.	36,000	Concrete Block	2	130'x 140'	Con. & Wood	Good	Yes
Dickson, Tenn.	15,000	Brick & Concrete	1	200'x 75'	Concrete	Good	No
Atlanta, Georgia	79,516	Brick & Concrete	4	148'x 140'	Con. & Wood	Fair	Yes
Atlanta, Georgia	38,422	Brick & Concrete	3	114'x 84'	Concrete	Excellent	Yes
Atlanta, Georgia	104,921	Brick-Mill Type	5	85'x 73'	Wood	Excellent	Yes
Atlanta, Georgia	39,762	Brick-Mill Type	3	282'x 47'	Wood	Good	Yes
Atlanta, Georgia	31,500	Brick-Mill Type	3	210'x 50'	Wood	Good	Yes

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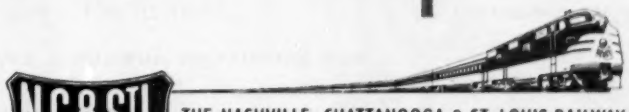

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Chemical Week

Volume 75 **October 9, 1954** Number 15

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OPINION . . . . . .

THE EVALUATION OF A COLLEGE

RAW MATERIALS:

(1) What evidence can be shown as to the degree of selectivity of students for entrance? _____
(2) What percentage of the student body receives aid? _____
(3) How much is expended annually by the college for scholarship help for capable but needy students? _____

KNOW-HOW

(4) What percentage of the full-time faculty hold the doctor's degree? _____
(5) What is the faculty/student ratio? _____
(6) How many of the faculty have been recognized by Ford, Fulbright, or Guggenheim fellowships and grants in the past five years? _____
(7) Are the undergraduates' facilities such as library, laboratories and classrooms adequate? _____

MARKET

(8) How does the college rank with other colleges in studies of *Who's Who in America, Origin of American Scientists,* and other criteria to determine prominence of graduates? _____
(9) To what degree do the alumni endorse the college through their financial support? _____

FINANCE

(10) Is the college accredited by a recognized accrediting agency? _____
(11) Has the college been selected by any national programs of significance? _____
(12) What is the history of the college's outside gift support during the past 10 years? _____

College Size-Up

TO THE EDITOR: In light of the several editorials you have published on the subject, I realize that you are aware of, and concerned about the technical manpower problem . . . and the related matter of what chemical companies can do to assist educational institutions . . .

Corporate grants for research or educational support are, in my opinion, rightly the responsibility of the far-sighted company . . .

Great emphasis and attention has been placed upon achieving maximum output of engineers and scientists who are highly qualified in the technology of their industry . . . I am impressed, however, by the variety of the manpower needs of the chemical industry, that is, the need not only for men with technical training but also those who have been educated in the liberal arts or humanities . . . Management and technical service requirements of the industry cannot be totally met by reliance on technical personnel . . .

Even though the matter of scientific manpower is pressing, so also is the status and progress of liberal arts educational programs critically important . . .

There are, of course, many smaller liberal arts colleges in need of financial assistance and the question always arises as to what justification a corporation has to support one college and not another. The decision to provide grants to college A, B, or C is ofttimes a difficult one . . .

It seems to me that executives might well apply the same sound analytical processes they employ in evaluating new technology, expansion projects, etc. . . . in appraising the sources of trained manpower—the college. The same feasibility factors used in studying chemical plants can be applied to colleges, i.e., factors equivalent to these: raw materials, know-how, market, finance . . .

I have prepared such a check list (*see above*). A high comparative record on these scores would, in my opinion, assure a real yield on the dollar invested in a collegiate project . . .

HOWARD H. HEILMAN
Consulting Engineer
Los Angeles

Capsuled Discussions

TO THE EDITOR: Your news article "Untying the Purse Strings" (*Sept. 4, p. 28*) strikes home . . . because we, for some five years now, have helped to provide part of "what security analysts want to know." . . .

As industry becomes increasingly complex . . . the ability of a company to present a capsuled discussion of itself to security analysts is becoming more and more important . . .

We enjoyed the timely article very much . . .

ALAN A. SMITH
Arthur D. Little, Inc.
Cambridge, Mass.

Again—Who's on First?

TO THE EDITOR: Your caption, "Who's on First?" to the recent letter on dry powder aerosols from Mr. A. R. Morse (*Sept. 4*), may well precipitate a series of comments from many of us claiming "first" in this new field. In view of the current interest in pressurized products of all types, it is reasonable to assume that dry powders are now being studied by many investigators.

We have refrained from commenting on your earlier reports of activity on pressurized powders, because we did not wish to publicize the work we have had under way for some time with our customers, particularly those in the pharmaceutical and cosmetic

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

industries. Now, it appears to be time for us to take our light from under the bushel and announce that we have not only developed processes and sold valves for spraying powders, but have, on the basis of this pioneering work, patents pending both here and abroad on the process and/or means of dispensing powdered materials.

WALTER C. BEARD, JR.
Manager-Valve Division
Risdon Manufacturing Co.
Naugatuck, Conn.

Chemi/Medico Problem

TO THE EDITOR: . . . I would like to congratulate Mr. Jessop on the excellent letter he wrote (*Sept. 11*) concerning the matter of detergents, toxicity, etc . . . and some of the comments that have been made on the subject by various people . . .

I would endorse most of his views . . . I have found time and time again that under almost identical conditions of pH, concentration, temperature . . . the incidence of dermatitis depends to a measurable extent on the chain length of the alkyl group on alkyl aryl sulfonates.

However, the structure and functional system of the human skin is so complex that we chemists should be extremely carefully in making definite statements about cause of dermatitis. By the same token, we might feel that it is proper for medical men to first become familiar with our side of the issue before they rush into print with their views . . .

WILLIAM H. SACHS
Chemical Consultant
Atlanta, Ga.

DATES AHEAD

American Oil Chemists' Society, fall meeting, Radisson hotel, Minneapolis, Oct. 11-13.

National Chemical Exposition, Chicago Coliseum, Chicago, Oct. 12-15.

National Safety Congress and Exposition, chemical section, Chicago, Oct. 18-21.

Packaging Institute, annual forum, Roosevelt hotel, New York, Oct. 25-27.

Assn. of Consulting Chemists and Chemical Engineers, annual meeting and symposium, Belmont Plaza hotel, New York, Oct. 26.

Plastics in Building Conference, sponsored by the Society of the Plastics Industry, the Manufacturing Chemists' Assn., and the Building Research Advisory Board, National Academy of Sciences, Washington, D.C., Oct. 27-28.

The Reader AUDITED PAID CIRCULATION ABC *His Mark*

THE ABC SYMBOL, which appears at the head of this page, is your brand—the reader's brand—on this magazine. It stands for Audit Bureau of Circulations. It means that this magazine will stay in business only so long as it continues to serve its readers to their satisfaction.

That Bureau—known for short as ABC—is a voluntary, nonprofit, cooperative association founded in 1914 by a group of publishers, advertisers and advertising agencies who wanted to establish and maintain higher standards of publishing practices than then prevailed. Its primary and specific purpose was to set up yardsticks to appraise circulation values and to verify the claims of publishers as to their circulations. For the buyer of advertising space this provides an effective means to take some of the guesswork out of buying and to reconcile the conflicting claims of competing publishers. BUSINESS WEEK magazine has aptly described ABC as "the publisher's conscience—and cop."

BUT IN DOING that job, ABC performs another function of high importance to the readers of ABC member publications. It provides a constant pressure on the publishers to keep alive in their staffs a sense of primary responsibility to their readers. That is because the most simple and direct method of making a publication responsible to its readers is to place upon it a purchase price, whether by subscription or newsstand purchase. The right to purchase or to refrain from purchasing a publication gives to the reader and to no one else the power to pass effective judgment on the publisher's success in serving the reading public. Each paid publication will grow or languish, will prosper or fail, in proportion as it wins or loses the following of thousands or millions of readers. The readers, by their patronage, record their judgments as to whether the publisher and his publication are measuring up to their responsibility to them.

And that is where the ABC comes into the reader's picture. The newspaper or magazine that carries the ABC symbol on its masthead must in the first place be a paid circulation publication. Moreover, it must conform to the high standards set up by the Bureau as to terms of payment and accounting methods. And again it must open all of its books to the auditors of the Bureau on demand.

SINCE THE INFORMATION thus determined by thorough and impartial audit is periodically made public through the ABC statements and audit reports, it is constantly available to and universally used by advertisers who are considering the purchase of space in an ABC publication. These reports show the circulation trend, as verified and certified by ABC, and thus put the advertisers in a position to know whether or not the publisher is rendering satisfactory service to his readers.

Thus the publisher who submits his publication to the supervision and discipline of ABC affirms in the strongest possible manner that he recognizes his primary obligation is to his readers and that he owes his standing to a voluntary demand by those readers. It follows that the editors of ABC publications must be exceptionally alert to the desires of their readers and responsive to their needs, since any decline in circulation will soon show up in the ABC statements and audit reports.

THAT IS WHY we describe the ABC symbol as the reader's brand. It shows that a publication must be primarily responsive to him and that he holds in his own hands its success or failure. And that ABC symbol is not only a constant reminder to him of that fact, but also an equally constant reminder to all concerned that the reader's willingness to pay for the ABC publication is the acid test of its value to him and to the advertiser.

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Chemical Week
BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

NEWSLETTER

New ground rules on corporate mergers have been posted. Chemical firms contemplating new acquisitions are boning up this week on the 11 points Attorney General Herbert Brownell, Jr., says his Antitrust Division is now using to determine whether a given merger "runs afoul of the Sherman or Clayton Act."

On first glance, it doesn't seem that these criteria would upset any of the chemical industry's many mergers in recent years; the trend has been to merge for diversification, rather than to consolidate competing producers.

Chief importance of the new merger considerations to this industry: their potential usefulness as a guide to what's legal. In this connection, they come as a welcome follow-up to the recent warning by antitrust chief Stanley Barnes *(CW Newsletter, Sept. 4)* that his staff will be paying increased attention to all mergers and proposed mergers that might tend to reduce competition.

•

Less restrictive than Sarasota, Fla. *(CW Newsletter, Oct. 2)* but just as concerned about pesticide toxicity is the state of Oregon. As a result of illnesses and two deaths this past summer attributed to pesticide chemicals, two state departments—agriculture and health—have teamed up with Oregon State College in a campaign to protect the public.

What they'll do: exchange information on toxicity, usage, labels and registration; distribute posters to farm groups; talk to feed and seed dealers, warning them not to sell small quantities in unlabeled containers, which is illegal.

•

Chemical process equipment is now being fabricated from irradiated polyethylene *(CW, April 3, p. 69)* that withstands temperatures up to 350 F. American Agile Corp., Cleveland, claims it's the first to make the material available in finished products for industrial use.

Evaporators made from the irradiated plastic are expected to find widest usage in the chemical and food processing industries.

•

Tamed for use as a solid rocket propellant is ammonium nitrate. Developed by American Rocket Co., Wyandotte, Mich., the propellant is made by coating the nitrate with an inorganic hydrophobic material, adding a dispersion of curing and combustion catalysts (aluminum and ferric oxides, carbon black) in a liquid binder, mixing and casting.

Claimed advantages: low cost (less than $1/lb.); easy handling; high power (specific impulse of 200 lb.-sec./lb.); smooth combustion at low pressures; and relatively low combustion temperature (2000 C).

•

Suitability of shale-oil asphalt for road surfacing is now being tested by the U.S. Bureau of Mines. It gave 500 lbs. of the material to the city government of Rifle, Colo., which mixed it with gravel in the normal manner and applied it to 10 blocks of city streets.

Proof of its suitability would be a step, albeit a small one, toward profitable exploitation of oil shale.

But meanwhile, a subcommittee of the National Petroleum Council is readying recommendations—to be presented to the NPC meeting week after next—that the government step out of shale oil research and that private industry take up the job.

If NPC approves its subcommittee's report, it will be passed along to Secretary of Interior McKay, who asked NPC to investigate after a storm of protests squelched a proposal in the last Congress to halt oil shale work at Rifle, Colo.

"Industry will eventually extract oil from shale," says subcommittee chairman B. A. Hardey, "and that goal will be achieved a lot quicker when the government steps out of the way."

•

In another government-out-of-business area: whether or not it will eventually sell the government's synthetic rubber plants (*see p. 30*), the disposal commission at least is prepared for the eventuality. It has sent a tentative uniform contract to each of the 35 firms that submitted bids. Companies will have the opportunity to suggest possible changes now—to save time during final days of negotiation.

•

Whether ammonia storage facilities should get fast tax write-offs may be thrashed out by industry and government officials at a meeting, if industry's wishes prevail. Several producers and distributors of anhydrous ammonia have been pressing for such relief, and a precedent exists in the establishment of a petroleum storage goal.

Secondary issues: what—if any—forms of nitrogen besides ammonia should be included; whether firms should be eligible that are primarily distributors rather than producers.

•

There's still a peck of trouble between Basic Management, Inc., and Henderson, Nev. Now the city council has filed suit (*CW, Sept. 18, p. 15*) against BMI in an effort to collect $61,710.

The squabble concerns the town's water and sewage system, which BMI turned over to the city when it became an incorporated municipality. The city now alleges that BMI owes it $48,000 on an agreement whereby BMI would pay $61,000 annually for city services and $13,710 in overcharges for water that BMI was supposed to supply at cost.

•

One of the BMI family, Western Electrochemical, is scotching the rumor that it was being taken over by American Potash & Chemical. Continuance of the firm's present management was assured last week when a voting trust agreement assuring control by majority owners for the next 10 years was filed with the board of directors. American Potash own 42% of Western's stock—not, in this case, a controlling bloc.

•

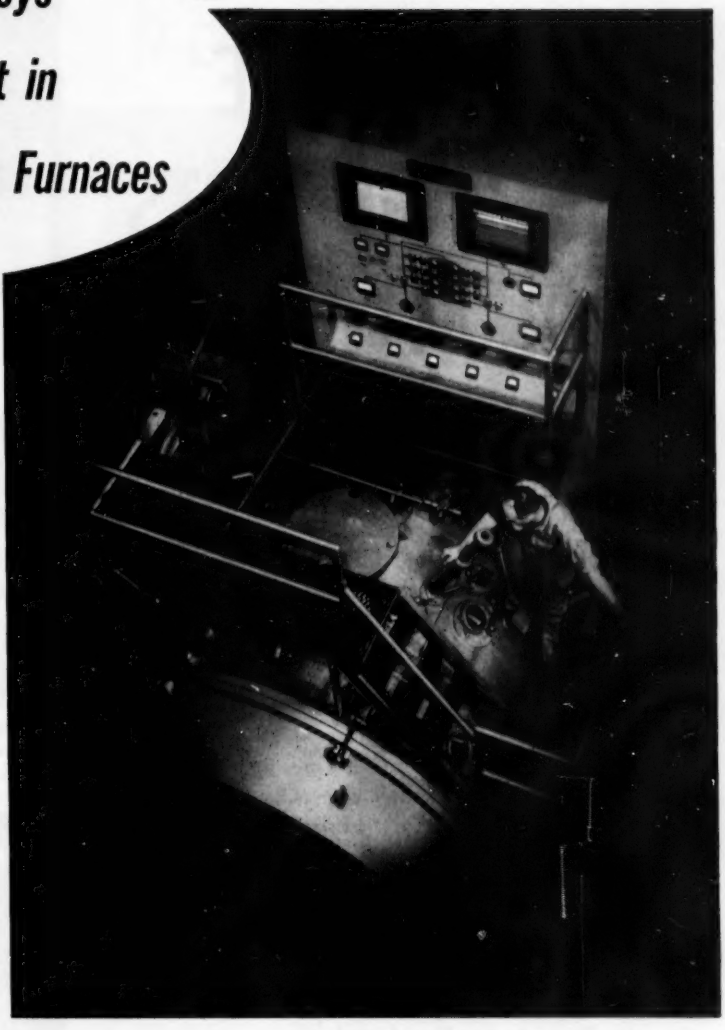
Heyden chemical has contracted to acquire all the outstanding stock of Nuodex Products, manufacturer of paint and plastics compounding agents. Acquisition is expected to be completed by Nov. 1.

•

Thought for the week: Robert Wilson, board chairman of Standard Oil (Ind.), predicted last week that "within the next 50 years an appreciable part of the world's food will be produced in chemical reactors from coal, air and water."

. . . The Editors

High-temperature Alloys now Melted and Cast in Stokes High-Vacuum Furnaces



A Stokes high-vacuum melting furnace of 1000-pound capacity at Utica Drop Forge & Tool Corporation, Utica, N. Y. The furnace is to be used for the melting and casting of high-temperature alloys for jet engine rotor blades.

Vacuum furnace melting and casting is the economical method for producing many new metals, with greatly improved properties. Alloys that can stand up in rocket engine combustion chambers and advanced jet engine turbines, metals essential for the construction of nuclear reactors, still other high-purity metals with properties not previously attainable . . . these are just a few of the more than thirty new elements vacuum processing has added to the industrial spectrum.

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Moreover, vacuum processing of alloys conserves critical hardening elements, since there is minimum loss of these metals during melting. More usable metal is obtained from each melt, and virtually all of the scrap can be salvaged by vacuum melting.

STOKES is *building* vacuum furnaces to process these high-purity metals in quantities up to 2000 pounds, and *planning* 5000-pound units. STOKES vacuum furnaces reflect the practical experience accumulated in fifty years of building vacuum equipment. An interesting NEW brochure is ready for mailing on request!

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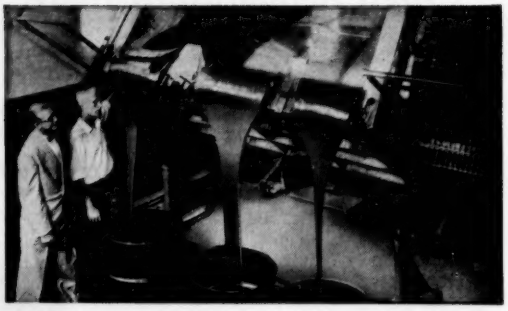
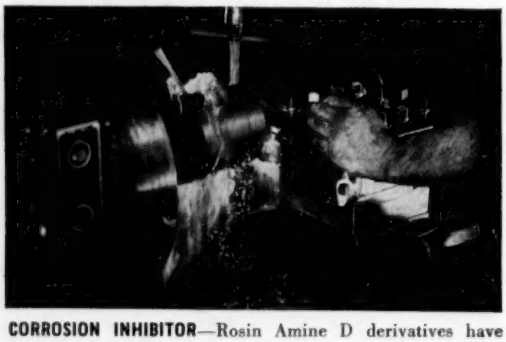


PIGMENT FLUSHING—Rosin Amine D is useful as a reagent for the production of flushed colors. Its use for this purpose is compatible with standard flushing practices.

FUNGICIDE—the value of Rosin Amine D and its derivatives as a preservative for many products has been demonstrated in rope, and other cellulosic materials.

WETTING AGENT—In ceramic and printing inks, as well as asphalt compounds, the surface activity of the Rosin Amine D family leads to better products.



CORROSION INHIBITOR—Rosin Amine D derivatives have demonstrated their value in soluble cutting oils, and other hydrocarbon systems.

NA54-4

BUSINESS & INDUSTRY. . . .

No Break in Impasse

By this week, it was mutually agreed in capitals around the world that convertibility is off for at least another couple of years. Realization of the fact came at the recent annual meeting of the International Monetary Fund; and implications of the postponement are already being sorrowfully discussed in chemical circles from Tokyo to Bangkok.

The reasoning runs something like this: chemical companies in Europe and Asia are necessarily dependent on American investment dollars if they are to keep pace with the rapidly expanding U.S. chemical industry. As of now (according to Secretary of the Treasury George Humphrey) total U.S. investments abroad are about $24 billion and growing at about $1.5 billion/year. But lately, many U.S. chemical companies have been complaining about "the plagues of inflation and nationalism" in certain European and South American countries —have been showing signs of retrenching on foreign investments. Other private investors have been equally disillusioned despite encouragement from the U.S. government.

That means the dollar flow is suffering. And if convertibility is also put off the problem's sure to be compounded. As British Chancellor of the Exchequer R. A. Butler puts it: "It's a vicious circle. Lack of confidence in the U.S. over repayment from a borrowing country means fewer U.S. dollars invsted abroad. Fewer dollars means restrictions on the volume of exports and imports; and restrictions in turn threaten economic stability and the chance of early convertibility or the complete freedom of movement of capital."

Recent U.S. moves to subsidize exports have only added to the troubles. Such actions as the new Washington program to dispose of agricultural surpluses abroad; the Export-Import Bank's drive to expand credit to U.S. exporters; the increasing use of foreign aid to boost U.S. exports—all tend to reopen the dollar gap on the export side and push convertibility off even further.

Technical Snags, Too: Chemical men abroad are admitting that many of the technical problems involved haven't been removed, either. The British, for example, now feel they won't be able to stop at the sort of limited nonresident convertibility envisaged last spring. Pressure on the pound from the outer sterling area would force them to go "all the way —quickly," despite backstopping from the International Monetary Fund and the Federal Reserve. More important: no system has been worked out yet to keep nonconvertible countries from discriminating against convertible countries, tradewise.

HUMPHREY: Says private investors spent $644 million abroad, first half '54.

Progress toward freeing world trade and payments won't stop, of course, just because the prospect of early convertibility is now negligible. But chemical men abroad are discouraged. They sense a real setback to their drive in world markets.

Matching Game

There'll be less guesswork, possibly less litigation, and probably more protection for U.S. producers when the U.S. Customs Bureau puts into effect its new regulations on importation of coal-tar chemicals into this country. Effective date: "on or about Dec. 22."

The new regulations are described as a simplification for importers, but actually are geared to enable the Customs Service to do a better job of policing imports that for more than 30 years have worried domestic coal-tar chemical makers. In brief, the new rules:

- Require foreign exporters to detail in their invoices all product specifications short of the structural formulas.
- Require Customs' laboratory in New York (*CW, Sept. 25, p. 14*) to set up a permanent collection or "test file" of coal-tar dyes with which samples of imported products could be compared.

It's hoped the new system will speed up the processing of coal-tar products through Customs, help prevent errors in product identification that might injure U.S. producers. Matching coal-tar imports with the test samples will determine whether the import is "comparable" to a domestic product and hence should be dutied on the U.S. selling price basis.

Earlier efforts to simplify coal-tar importing procedures led to a fierce controversy with foreign manufacturers. Exporters complained that listing formulas would violate their trade secrets. The new plan represents a compromise that the agency hopes will work out to the satisfaction of importers and domestic producers alike.

Fuel-line Fracas

How much natural gas will be available for chemical process plants outside of the gas-producing states, and how soon this vital fuel and feedstock will be piped into the Pacific Northwest and other areas, are questions being determined in legal proceedings grinding along this week.

In one case, Canada's Westcoast Transmission Co. says it's asking the U.S. Court of Appeals at Philadelphia to overturn the Federal Power Commission decision (*CW Newsletter, June 26*) that gave a green light to Pacific Northwest Pipeline Corp. to supply natural gas to the Pudget Sound region. Westcoast contends that it could deliver gas from its reserves in the Peace River area of British Columbia and northern Alberta more economically than Pacific Northwest could bring the gas in from the San Juan Basin in Colorado and New Mexico.

At Washington, FCC has started okaying independent gas producers' applications to sell natural gas for interstate shipment. First two permits under the U.S. Supreme Court's ruling in the Phillips case have been issued to Delta Drilling Co., Tyler, Tex., and M. L. Mayfield, Houston, whose gas will be piped to Alabama and West Virginia, respectively.

WILCOX: Promises zinc oxide from ore concentrates without prior roasting.

Fact or Still Fancy?

When a young mining engineer from Idaho applied to the Spokane, Wash., County Planning Commission last November for permission to build the West's first zinc oxide plant, the chemical industry was openly skeptical. Barnard Wilcox and his associates (who had recently organized the Northwest Chemical & Refining Co.) claimed to have a new process to produce high-grade zinc oxides directly from ore concentrates without prior roasting. But chemical men were far from sure the process would work.

Now, 11 months later, Northwest has just offered 800,000 shares of common stock (at 25¢ a share) to finance construction of its first plant; initial output is scheduled to be about 5,000 tons of various grades of zinc oxides annually. That would catapult Northwest into direct competition with major producers in Chicago, St. Louis and Cincinnati—who now dominate the estimated 30,000-ton market west of the Mississippi.

To size up the potential market, Wilcox says he talked to about 50 representatives of some 20 oxide-consuming firms in the West. Now he asserts: "Three or four of these firms will be Northwest's first customers." But it's not the sales situation that is attracting most attention. Rather it's the competitive possibilities of the new process.

In essence, the process works something like this: an automatically controlled furnace (using any standard fuel) roasts either standard zinc concentrates (50-55% zinc) or low-grade flotation concentrates (30-40% zinc), using the sulfur in the ore as a fuel booster, to produce either leaded or lead-free oxides of pigment quality (about 96% purity).

Heart of the process, of course, is the furnace (about which Wilcox is loath to talk). While admitting "we haven't gone to the ultimate in control equipment yet," he maintains that recording and control setups have been devised to assure consistent product quality.

Whether a commercial-scale unit will run according to Wilcox's expectations is, of course, still an open question. However, one West Coast backer of the new stock issue is positive in his opinion. "I believe that with a larger furnace, and the use of adequate control instruments, the product will be a uniformly good grade of zinc oxide. Thus, the process would be of interest to mining companies; they could benefit via greater net smelter returns and fewer penalties and deductions. But we still haven't seen the control problem licked."

However, Northwest officials are confident and going ahead with their plans. As a starter, they're planning a plant capable of handling about 30 tons of raw material daily (available at about 5¢/lb. of zinc content), to yield 10-15 tons of commercial grade zinc oxide (now selling at 14.5¢/lb. in West Coast markets).

Operating three 8-hour shifts a day, the plant will require only two workmen per shift, will cost $180,000 (including land) to build.

Long-Term Goals: Eventually, company officials say, they hope to move into commercial output of fertilizers and soil conditioners—as a by-product business. But that dream's still a long way off.

And looking to the long term they foresee the possibility that the time may come when small zinc oxide plants will be spotted strategically in various mining districts. That, at least, is a vision of Northwest Chemical.

Tax Loophole Spotted?

Chemical companies, research institutes and commercial laboratories whose cost of safety control and toxicological research bulks large are looking fondly at four words added to one of the thousands of sections of the 1954 tax law.

Those words: "testing for public safety." The section: 501 (c) 3, one of several defining charitable and tax-exempt institutions. It's possible that this section may enable companies to cut down tax liabilities, though its full import won't be measured until covering regulations are written by the Internal Revenue Service—or perhaps, until the measure is tested in the courts or changed by Congress.

There are enough limitations on the section that it certainly won't be a big windfall. In fact, one organization whose membership could perhaps find benefits—the American Council of Commercial Laboratories – opposes a broad interpretation of the section. Its reasoning: becoming partly tax-exempt hurts the group's over-all position vis a vis the wholly tax-exempt institutes that they may be competing against.

Most tax lawyers admit to not knowing what the provision will mean, however. It was made by the Senate Finance Committee, reportedly to allow Underwriters Laboratories tax-exempt status.

It's been suggested that "testing for public safety" could even mean conducting tests for the Defense Dept., since national defense activities are in the interests of public safety. Though this is probably stretching a point, many activities could be included. One notable inclusion would probably be an industrywide safety testing laboratory like the one tentatively proposed by the Manufacturing Chemists' Assn. (*CW, Oct. 2, p. 23*) to correlate toxicological research.

Exemption from tax for any labora-

tory setup under this provision, however, becomes difficult as the number of corporations or people contributing to it gets smaller. Another drawback: such an organization may not pay cash dividends, though no limitation on financing new laboratory buildings, equipment or such expenditures is made in the revenue provision.

Three-Way Tangle

Another round in the tetracycline controversy began this week as American Cyanamid Co. filed suit against Bristol Laboratories, Inc., charging that Bristol's production and sale of the broad-spectrum antibiotic—under the tradename Polycycline—infringes Cyanamid's patent (U.S. 2,482,055) covering chlortetracycline, which is sold by the Lederle Laboratories Division of American Cyanamid as Aureomycin.

Cyanamid's complaint, filed in the U.S. District Court for northern New York at Utica, charges that Bristol's Polycycline contains Aureomycin, covered by Cyanamid's patent and that in making its product Bristol uses processes and methods protected by Cyanamid's patent. The complaint asks damages and an injunction against future infringement.

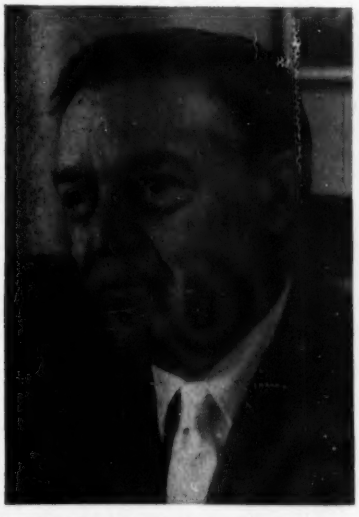
President Frederic Schwartz of Bristol counters by declaring that Cyanamid's 1949 patent relates solely to Aureomycin, and flatly denies that Bristol's production of tetracycline involves any infringement of this patent. Despite the suit Bristol will continue to manufacture tetracycline, which the parent Bristol-Myers Co. has just arranged to sell as Polycycline to Upjohn and E. R. Squibb.

First producers of tetracycline were Chas. Pfizer & Co. and Lederle. Pfizer claims prior rights with first scientific disclosure and filing for a patent in October 1952.

Boon to Chemicals

Under a new policy in Washington last week, the Office of Defense Mobilization sharply increased the number of surplus labor areas eligible for federal tax amortization assistance. Some 72 areas in the U.S. are now troubled with substantial unemployment problems, ODM reports. And companies that decide to locate there (or expand industrial facilities) may receive special quick tax write-off aid—up to 25% above the amount regularly allowed.

Effective date of the new policy: Oct. 1. Presumably, companies that received standard tax write-offs before that date aren't included in the new directive.



MCA'S ROSSON, TREASURY'S ANDREWS: For industry, less rigmarole.

The Ghost Still Haunts

Outside the industry, it's generally believed that prohibition laws died in this country 20 years ago; but the ghost of the 18th Amendment is still badgering industrial alcohol companies.

Representatives of firms that produce and distribute industrial alcohol and distilled spirits met with Internal Revenue Service officials in Washington late last week to discuss ways of getting the last remnants of the 1919 National Prohibition Act off the books.

The remaining provisions of that law don't affect industrial or individual users of alcohol and spirits, but do make life unnecessarily onerous for companies that produce, warehouse, denature and package the materials, in view of the fact that a patchwork of later laws and regulations was superimposed on the parts of the Prohibition Act not repealed in 1933.

The 150-plus industry men who listened to and questioned government officials last week included a number from the chemical industry, interested in both fermentation and synthetic alcohol. (On hand were six members of the Manufacturing Chemists' Assn.'s industrial alcohol committee, headed by Shell Chemical's Murray Rosson.)

The proposal made to industry men marks a new step in Internal Revenue's attempt to simplify operation. Earlier this fall, IRS adopted new regulations based on the 1954 revenue code; this time, Commissioner T. Coleman Andrews is planning legislative proposals that will go to Congress, and—if adopted—will be the subject of further new implementing regulations.

As the laws now stand, there is an artificial distinction between producing fermentation alcohol for industrial and beverage uses. A plant that produces both must do so in alternate and wholly separate runs. Material must then go to separate buildings for storage and for denaturing before industrial use.

IRS officials generally feel that such arbitrary separation is unnecessary; they propose that beverage and industrial production could be lumped, and that denaturing could take place either in the distillery or in the bonded warehouse used in the regular beverage production process. Denatured material taken from such a warehouse would be treated in the same way as a tax-free withdrawal of beverage material.

The details of the legislation—as it affects both industrial and beverage alcohol producers — must still be worked out. But the IRS alcohol tax survey unit is aiming to produce a set of recommendations that will have the united support of industry, and so, have a reasonable chance of passage in Congress.

Stopper for Stones

Showing more solicitude for domestic producers, the U.S. Tariff Commission —in a reversal of form that may be due to its new Republican majority—has ruled in favor of Union Carbide's Linde Air Products Co. division in the synthetic gem imports case (*CW, Jan. 23, p. 34*).

On a straight party-line vote (three Republicans against the two Democratic members), the commission found that "the unfair acts in the im-

portation of synthetic star sapphires tend to injure substantially an efficiently and economically operated domestic industry."

Werner Von Clemm, the New York importer whom the Carbide complaint accused of unfair competition, is expected to ask the Court of Customs and Patent Appeals to throw out the commission's ruling. Von Clemm also is pressing for a hearing on his civil suit in Federal Court at New York in which he contends that the Linde star-process patent is invalid and that the Tariff Commission should not have jurisdiction.

This is a point that may have to be decided by the Supreme Court: Can the Tariff Commission rule on patent validity and infringement? Von Clemm's lawyers argue that patents are beyond the commission's province, that the commission should leave patents to the courts as does the Federal Trade Commission in handling unfair competition cases between domestic concerns.

COMPANIES . . . .

Warner-Hudnut, Inc. plans to offer to holders of its 6% $100 par preferred stock the right to exchange their shares for subordinated 5% debentures, due on Dec. 1, 1974. Basis for exchange: $105 of debentures for each share of preferred. The offer's expected to be made by mid-October; Warner-Hudnut directors reserve the right to declare the exchange effective or to withdraw the offer—depending upon the number of stockholders who accept it.

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Smith-Douglass Co., Inc. attained the highest sales and earnings records in its 32-year history in the year ending July 31. Net income was over $2.4 million—a 12.9% rise over 1953; sales increased 6.3%—to $39.5 million.

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An underwriting group, headed jointly by Morgan Stanley & Co. and Goldman, Sachs, & Co., New York, have offered 150,000 shares of Spencer Chemical Co. 4.2% cumulative preferred stock, par $100 per share. Of the proceeds, Spencer executives say $7.9 million will be used to redeem the company's 4.6% preferred stock; the remainder will be used to finance new facilities and currently contemplated expansion plans.

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Lerner Investment Co., Oakland, Calif., has submitted the high bid ($227,000) to the General Services Administration at Seattle, Wash., for the government-owned alcohol plant at Springfield, Ore. Three other bids (by Perry Equipment Co., Philadelphia; Western States Development Co., San Francisco; and Alaska Junk Co., Seattle) ranged down to $133,000.

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Ideal Cement Co., Denver, has purchased the government-owned war surplus alumina experimental plant at Laramie, Wyo., for $1.2 million. Ideal will start production this fall, has a clause in its purchase contract that provides that the alumina output of the plant will be made available to the government whenever desired. Original cost of construction: $4.5 million.

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Olin-Mathieson Chemical Corp. has acquired a substantial interest in Hunter Engineering Corp., Riverside, Calif. Financial details of the transaction have not yet been released.

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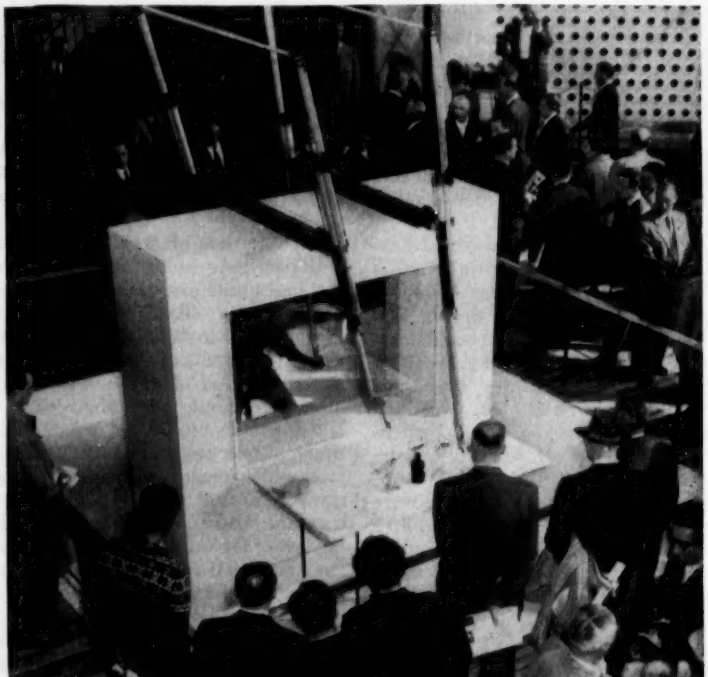
More company incorporations:

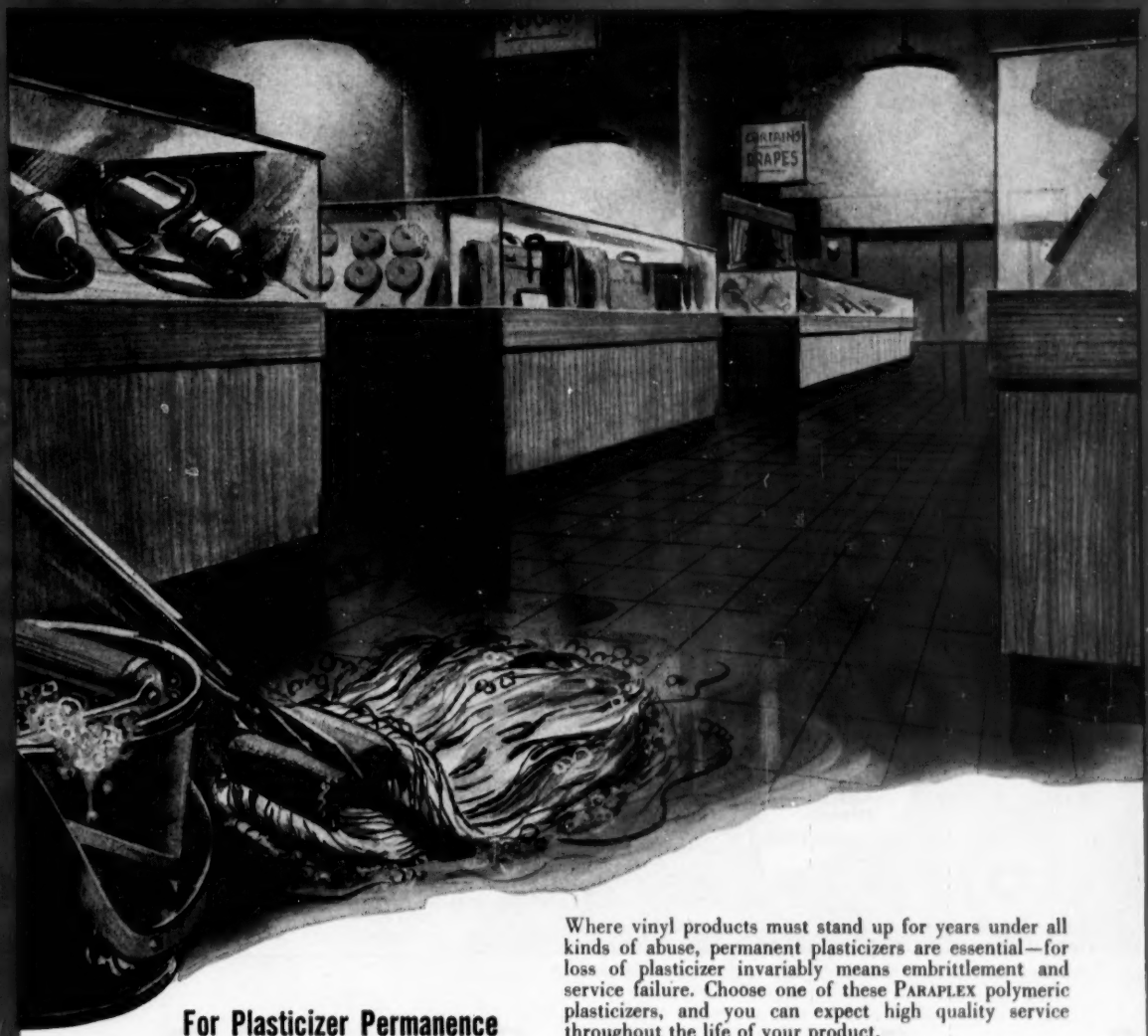
- Insecticide Chemical Corp. has filed a charter of incorporation in Dover, Del., listing authorized capital stock at $100,000.
- Marshall Oil and Chemical Co., has filed a charter of incorporation, also in Dover. Authorized capital stock: 15,000 shares, no par value.
- Metal Chlorides Corp., Inc., Middleport, N.Y., has filed in the county clerk's office, listing capital at $30,000. Stock consists of 300 common shares, par value $100 each.
- Delta Chemical & Fertilizer Co., Inc., Greenville, Miss., has obtained a charter at Jackson. Authorized capital: $100,000.



Show Window Toward the East

REAL MAGNET at this year's West Berlin Industrial Fair is the "Atom" Exhibit in the United States' Marshall House.

Large crowds from the Eastern Zone are gathering daily to gape at a remote-controlled robot handling fissionable materials behind a lead screen. West Germany's chemical industry is well represented, too, has a large exhibit titled "The Human Being in the West German Chemical Industry." Aside from its obviously propagandist tone, it presents some sober facts on wages and working conditions in the West in glaring contrast with East German conditions.



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Success Scenario: Oil, Ocean and Ores

The lure that brought the motion picture industry across the continent to southern California—the much publicized "year-around outdoor weather"—is only part of the magnet that has been pulling chemical processing plants to the southern part of Los Angeles County.

Other attractions: Close-at-hand production of petroleum, natural gas, borax, potash and other minerals; spacious harbor facilities; and presence of a large and growing industrial, agricultural and consumer market.

That these factors are becoming weightier each year is seen in chemical management's multimillion dollar expansion plans for the Long Beach-Los Angeles area.

The giddy glamor of movie stars, palm trees and nearby Santa Catalina island may explain why so many tourists and retired farmers go to Los Angeles and vicinity; but more sober and substantial reasons account for the location in this area of such serious chemical business ventures as the hulking polyethylene plant now being built by Union Carbide's Bakelite Co. division at the Torrance site shared by Carbide and Carbon Chemical Co. division.

This is the biggest single unit in the multimillion dollar petrochemical expansion work going on this week within a 10-mile radius in southern Los Angeles County and adjacent Orange County. All this added investment in the area mirrors the industry's recognition of the Southwest in general and southern California in particular as a market area that now demands its own industrial supply sources.

There's no secrecy about why this has come to pass. Civic pride is a southern California trademark, branded both on "native sons" and on citizens by adoption, but borne with especially fierce zeal by Los Angeles and Long Beach residents. Thus fired up, they readily recite such industry-inviting facts as:

- Los Angeles now is neck-and-neck with Philadelphia for "third largest city" honors, and about 6 million people now live in the 10 south California counties.
- Los Angeles and Orange counties comprise a metropolitan area whose estimated yearly manufacturing output—more than $4.6 billion last year—ranks third in the nation.

LOS ANGELES COUNTY'S CHEMICAL COLONY

KEY NO.	COMPANY	PRODUCTS
1	Union Oil Co. refinery and Brea Chemicals div.	Ammonia, mercaptans, sulfur
2	General Petroleum Corp. refinery	
3	Richfield Oil Corp. refinery	Naphthenic acid
4	Shell Oil Co. refinery	
5	The Texas Co. refinery	
6	Tide Water Associated Oil Co. refinery	
7	Hancock Oil Co. refinery and Hancock Chemical Co.	Sulfur
8	The Borden Co. and American Polymer Corp. div.	Resins, emulsions
9	Carbide and Carbon Chemicals Co.	Ethylene products
10	Dow Chemical Co.	Polystyrene
11	Dow Chemical Co.	Iodine products
12	Rubber Reserve Group—Midland Rubber Corp., Dow Chemical Co., Shell Chemical Corp.	Synthetic rubber, styrene, and butadiene
13	Monsanto Chemical Co.	Polystyrene
14	Montrose Chemical Corp.	DDT
15	Pacific Coast Borax Co.	Borates
16	Pittsburgh Plate Glass Co. Paint div.	Alkyd resins
17	Procter & Gamble Mfg. Co.	Glycerin
18	Shell Oil Co. refinery and Shell Chemical Corp.	Petrochemicals
19	Shell Chemical Corp.	Petrochemicals
20	Stauffer Chemical Co.	Ammonium chloride, caustic soda, hydrogen chloride, sodium hydrosulfide, sulfuric acid
21	Van Camp Laboratories	Histamine, fish oil, protein hydrolysate
22	Johns-Manville Products Corp.	Asbestos cement
23	Great Lakes Carbon Corp. Dicalite div.	Diatomaceous earth
24	Great Lakes Carbon Corp. Carbon div.	Electrode coke
25	Kaiser Gypsum Co., Inc.	Gypsum and plaster products
26	Spencer Kellogg & Sons, Inc.	Vegetable oils
27	Mastic Tile Corp. of America	Tile and adhesives
28	Arrowhead Rubber Co.	Silicone rubber products
29	Rubbercraft Corp. of Calif.	Synthetic rubber products
30	Finch Paint & Chemical Co.	Paints and thinners

Sites not indicated:
American Potash & Chemical Corp., Eston Chemicals Div. (ethylene dibromide), Torrance
American Rock Wool Corp. (phenol formaldehyde resin), Torrance
Barnett Laboratories (carotene), Long Beach
Universal Detergents, Inc. (sulfonates), Long Beach

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• Los Angeles County is tops in the U.S. in value of agricultural production, and southern California leads the country in producing numerous kinds of fruits, vegetables and sea foods.

• Southern California pumps about one-twelfth of all U.S.-produced petroleum, some 120 million bbls./year.

Sport-Shirt Climate: Accordingly, it's apparent that there's a noteworthy market here for industrial chemicals, agricultural chemicals, and consumer-use chemical specialties.

Added attractions are the commodious seaport (whose continuing development is being financed largely by revenue from oil and gas production), availability of various mineral and other raw materials, and a labor supply that is large, stable, and increasing.

But the southern California climate is not to be ignored as an economic factor. Plants here are said to cost less to build and maintain, weather seldom interferes with production and construction schedules, and the year-around slacks-and-sport-shirt temperatures appeal to executives, employees and customers alike.

The Oil Awakening: Until the early 1920s, the harbor area was pretty sleepy, industrially speaking, although Pacific Coast Borax caught a glimpse of the port's potential in 1915, acquired the Wilmington site that it still uses for its refinery. Wilmington and San Pedro were fishing towns, with small-scale harbor facilities, until they were annexed by Los Angeles in 1907. (Until then, there was public controversy over whether the Los Angeles harbor should be located at Wilmington and San Pedro or at Santa Monica.) With federal help, the city completed a breakwater in 1910, first major step in harbor development.

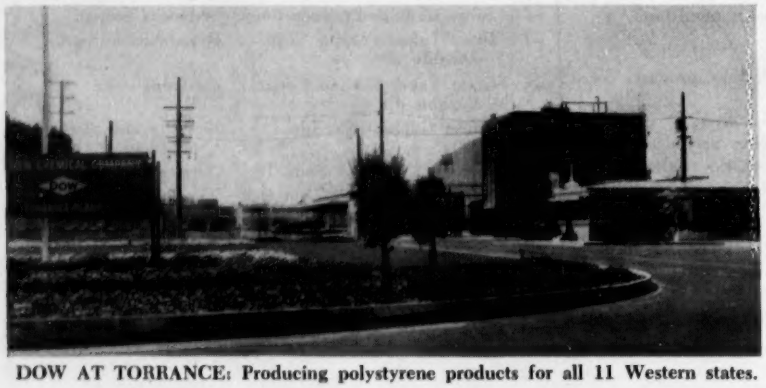
Long Beach, which had been incorporated following the land boom of 1885-87, was mostly a seaside resort, although federally aided harbor construction work began there in 1918. Then came, in 1921, the famous Signal Hill oil discovery, first in the coastal strip of the Los Angeles Basin. The Torrance field discovery followed in 1922, and the Dominguez field in 1923.

From then on, business boomed in the twin ports of Los Angeles and Long Beach. Within two years, ship traffic through the Panama Canal was doubled by the increase in tankers, largely out of these ports. Bulk petroleum still accounts for more than two-thirds of the two ports' total tonnage, but chemical shipments for the 1952-53 fiscal year amounted to some 345,000 tons—165,000 tons incoming, 180,000 tons outgoing. The Port of Los Angeles—following the $25-million postwar improvement program—now represents an investment of about $150 million; total investment in the Port of Long Beach now is more than $55 million, of which more than $46 million has come from oil royalties.*

* Long Beach, probably the most oil-rich city in the world, now is defending its approximately $30-million/year oil and gas income in two lawsuits. One plaintiff is trying to keep the city from using that money for any purpose other than harbor development; the other contends that the whole state, not just Long Beach, should profit from oil wells in the city's offshore "tidelands."

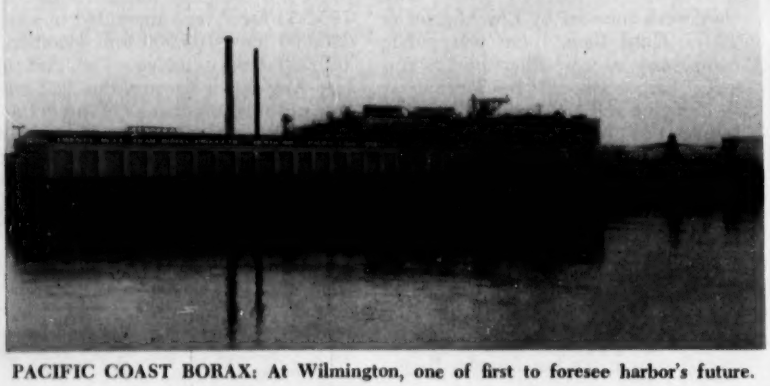
Story begins on p. 18

BORDEN AT DOMINGUEZ: PVA emulsions coming; butadiene, styrene to follow.



DOW AT TORRANCE: Producing polystyrene products for all 11 Western states.

MONSANTO AT LONG BEACH: On stream in December, new phosphoric acid unit.



PACIFIC COAST BORAX: At Wilmington, one of first to foresee harbor's future.

Trail Blazers: To a considerable extent, the oil companies blazed the trail in the harbor area for the chemical industry. One refinery—Union Oil Co.'s Wilmington unit—started operating in 1917, even before the Signal Hill oil find. It was located there for the site's proximity to what is now Union Oil's Los Angeles Marine Terminal, in San Pedro. The Seal Beach oil field was discovered in 1926, the Wilmington field in 1936, and now there are 15 operating refineries in the harbor vicinity.

Most of these refineries have been enlarged or remodelled during the past few years. Major recent project: the $40-million expansion program of Richfield Oil Corp. in Watson, dedicated last May.

Almost completed at the General Petroleum refinery in Torrance is one of three scheduled thermofor catalytic reformers being built by Socony-Vacuum and its associates at a cost of approximately $27 million.

Doubling in Chemicals: Some of the Long Beach area refineries go in for petrochemical production, but with less emphasis than in certain Texas refineries.

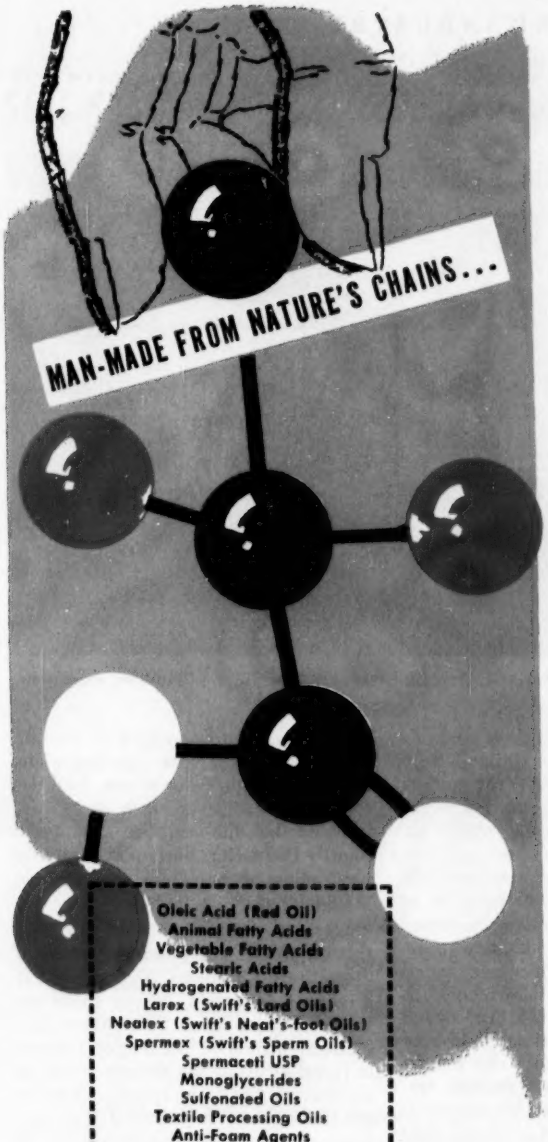
However, included in Union Oil's $42-million postwar expansion at its Wilmington refinery are a 1,300-lb./day mercaptan recovery unit, a 40-ton/day sulfur plant, and an ammonium sulfate plant. All of these are producing for marketing by Union's subsidiary, Brea Chemicals, Inc. The refinery also has a conversion station for aqua ammonia, a key unit in Brea's aqua ammonia distribution system.

And next door to Shell Oil's Dominguez refinery is the Shell Chemical plant, whose principal products are isopropyl alcohol, acetone, methyl isobutyl ketone, secondary butyl alcohol, and methyl ethyl ketone.

Its isopropyl alcohol and acetone facilities were expanded in 1947, methyl isobutyl ketone facilities in 1951.

At Signal Hill, Hancock Oil has started a $5-million expansion program, but Hancock Chemical—which so far has only a sulfur plant there—has dropped plans for a glycol plant.

Chemicals from Oil: Of the chemical plants located in the Los Angeles area because of the nearness of petroleum raw materials, best known are the three government-owned plants teamed up to produce GR-S synthetic rubber at Torrance. This plant trio, with an 82,000 long tons/year capacity, was opened in June '43; shut down in 1946; and reactivated in Dec.



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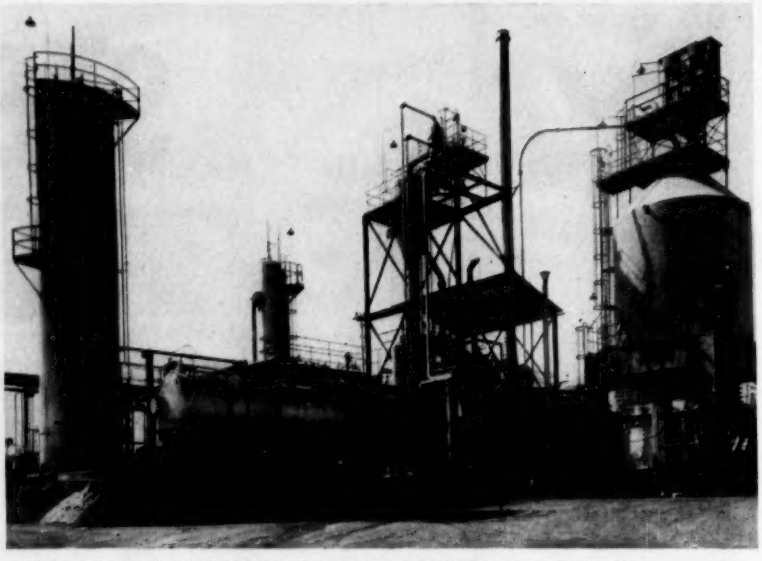
Story begins on p. 18



UNION OIL, BREA CHEMICALS: Since World War II, a $42-million expansion.

'50. The end-product plant is operated for the government by Midland Rubber Corp., a subsidiary of Minnesota Mining & Mfg. It gets its butadiene and styrene from adjacent plants operated by Shell and Dow, respectively, which in turn get their raw materials from nearby refineries.

Dow also has three privately owned properties in the area: Its new polystyrene plant in Torrance, dedicated one year ago this month, which ships as far east as Denver; its Seal Beach plant, producing a reported 98% of the iodine made in the U.S.; and its Terminal Island caustic storage terminal, which gets caustic by ship from Dow's Pittsburg, Calif., plant, sells it largely to refineries.

Stauffer built its sulfuric acid plant at Dominguez in 1928, enlarged it in 1942 and '44, and has been giving it an almost continuous expansion and modernization treatment since the war. Most of its raw material comes from within a few miles of the plant, and most of the production is sold to neighboring refineries.

Borden's Chemical Div. plant—built in 1952 to produce resorcinol—was located in Dominguez to be close to raw material sources (65% oleum and caustic soda from the adjacent Stauffer plant, benzene from Shell across the street); but resorcinol production was dropped several months ago. The plant now makes phenol formaldehyde resins, urea formaldehyde resins, resorcinol adhesives, casein glues and label pastes. Borden, which recently bought American Polymer Corp., currently warehouses polyvinyl acetate emulsions at this spot, but has plans for building polymerization facilities for producing PVA emulsions here, possibly by the end of this year. Shortly thereafter, Borden may go into production of butadiene and styrene for latex paints.

Gas and electric rates are low, and though water is a perennial problem in southern California, it's available at a reasonable rate ($1.03 per 1,000 cu. ft. for a plant using 500,000 cu. ft./quarter). Much of the region's water is piped in from the Owens River in the Sierras and from Hoover Dam on the Colorado River—a new $10 million bond issue was sold last spring to finance improvements in the latter piping system.

On three important points, plans for new industrial plants in the region are required to be checked in advance: water usage, sewage outflow, and air pollution control. Unless water use is tremendous, approval on that point is routine; but sewage and smog are real headaches, both for industry and for the community. Rapid industrial and population growth has put a big load on sewage facilities, and meeting smog control regulations can be expensive (Richfield, for instance, has spent more than $6.7 million on air pollution control at its Watson refinery). However, these difficulties aren't overwhelming the chemical and petrochemical companies that see the Los Angeles area as a spot for their present and future West Coast plants.

Still Another *National Aniline* Dicarboxylic Acid With an Important Potential in Resins, Plasticizers and Rubber

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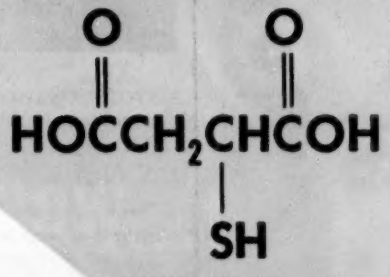
(Mercaptosuccinic Acid)



Thiomalic Acid is unique as the **only commercially available** dicarboxylic acid containing a reactive **mercapto group** as well as two carboxyl groups. With its three **functional groups** and the resulting possibilities for cross linkage, **Thiomalic Acid** should appeal to those engaged in resin, plasticizer and **rubber research.** This interesting chemical also should find application in **pharmaceuticals** and dyestuffs.

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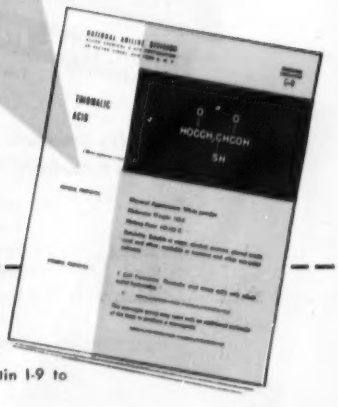

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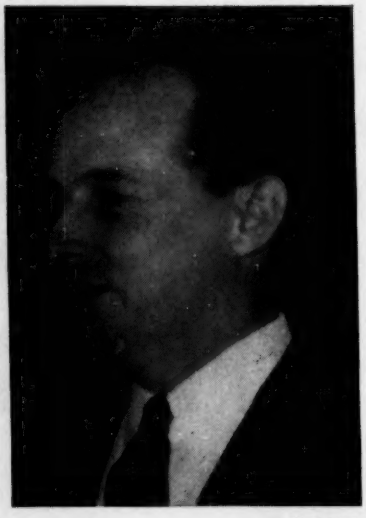


WIDE WORLD

MAYOR MORRISON: In New Orleans, city ponders legality of fluoridation.

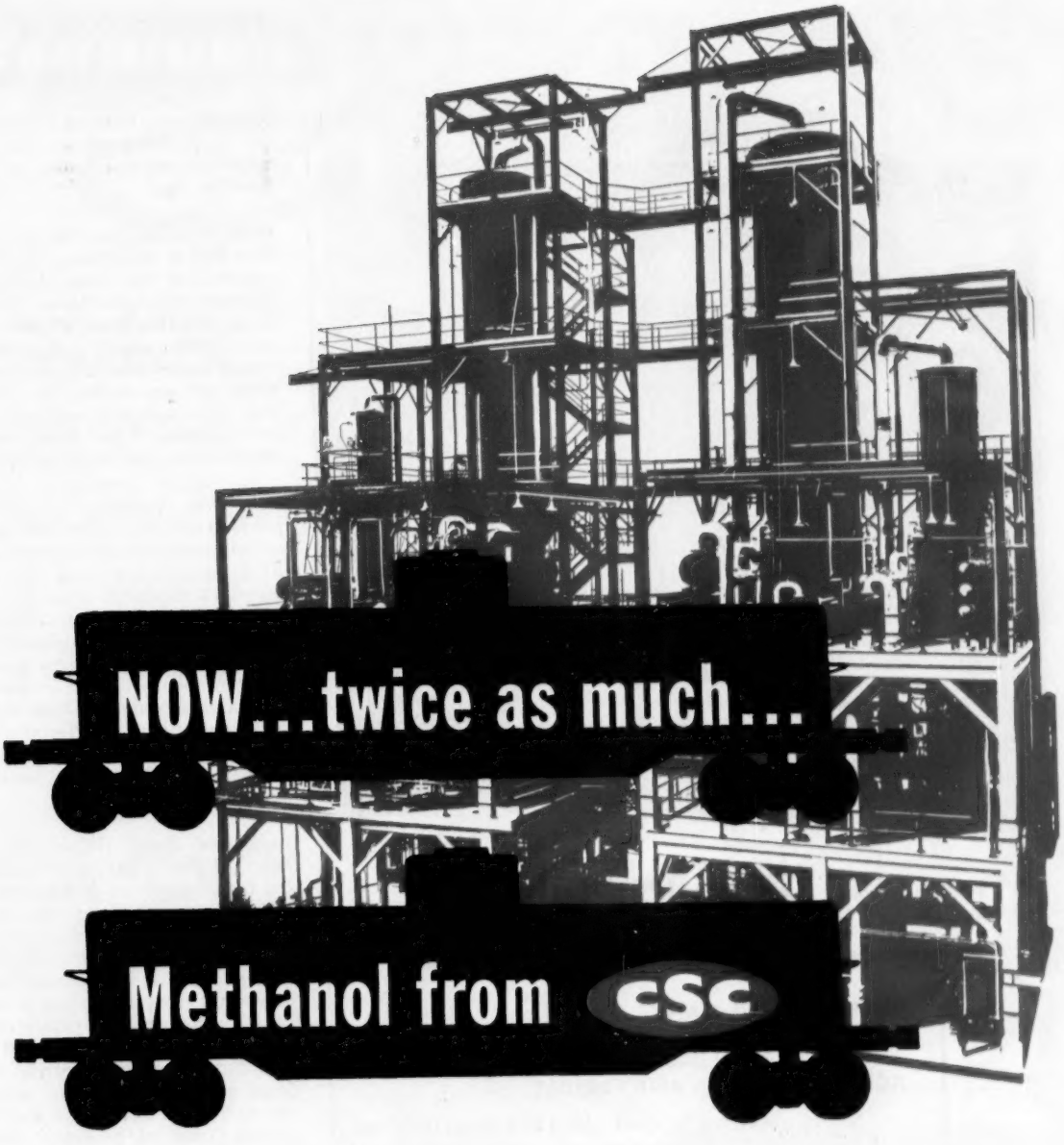
LEGAL . . . . . .

Fluorides and the Law: Still more incidents that seem to call for a Supreme Court ruling on whether water fluoridation is in conflict with the law of the land are turning up, week after week. Latest of these: an antifluoridation lawyer interrupted proceedings in Common Pleas Court to ask for a last-minute injunction that would keep Philadelphia from starting its fluoridation program. (This request was denied, and fluoridation began there that very day.)

In New Orleans, the city administration headed by Mayor De Lesseps Morrison is fidgeting with the question of the legality of treating city water with tooth-protecting fluorides. The water board now takes the position that the law doesn't permit fluoridation until doctors, dentists, biochemists and other scientists agree that fluorinated water can pass as the "pure water" required by law. A committee of "prominent doctors and biochemists of New Orleans" is to be appointed to study this question.

•

Salt Royalty Suit: Lengthy litigation between the state of Utah and the Morton Salt Co. has ended with a new contract that is expected to bring into state coffers at least $12,000/year for salt taken from the waters of Great Salt Lake by the company's big solar evaporation plant near Saltair, Utah. Formerly, the company had paid the state a flat $10,000/year under terms similar to those in grazing land leases; the new contract calls for payments to the state on the basis of 10¢ for each dry ton of salt extracted. Morton also



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CSC INDUSTRIAL CHEMICALS

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has agreed to pay the state $24,429 for salt extracted during 1952 and '53. State Attorney General E. R. Callister says he'll now negotiate similar contracts with other companies taking salt from the lake.

•

Blast Damages: Another lawsuit has been filed at St. Louis as a result of the explosion at the Wilson Keith & Co. pharmaceutical plant there (*CW, June 19, p. 18*). Ida Mae Williams is asking $35,000, asserting that the blast caused her permanent personal injuries while she was working in a laundry shop in an adjoining building. Named as defendants: Wilson Keith, Universal Match Corp., Laclede Gas Co.

•

Few Drug Violations: A few drug products run afoul of the Federal Food & Drug Administration each month; FDA revealed last week that it had seized 14 shipments of drug preparations during August, compared with 13 drug seizures in July. Included in the August confiscations: eight glandular products, one of which consisted of hormones at only half the strength stated on the label and the other seven of which were said to be "combinations of inert ingredients that would be worthless for any purpose."

•

Insecticide Ban: Delaware's State Board of Health has been told that it has the authority to prohibit the sale of insecticide vaporizer units that are considered dangerous to humans. The board—worried about possible consequences from use of electrically heated insecticide vaporizers in homes and in food shops—had asked the state attorney general about it. He said state constitution and laws give the board broad powers relating to the preservation of life and health, and that these powers "must of necessity" include the right to prohibit the sale of insecticide vaporizers containing toxic chemicals.

•

Tax Settlement: Most chemical companies have prospered more in postwar years than they did during World War II; but one exception comes to light in a tax case recently settled by an agreement between the U.S. Internal Revenue Service and Chester Eaton of Erlanger, Ky. His chemical partnership firm flourished on defense contracts up to 1946, but afterward had difficulty in marketing its products. Incorporated under a new name, the firm lost money from 1947 through 1952 but has stayed in business. IRS has agreed to accept $500 and a share of any sizable future income from Eaton in settlement of a $25,719 tax claim for 1946.

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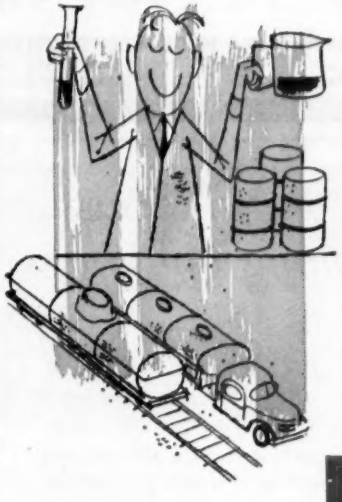

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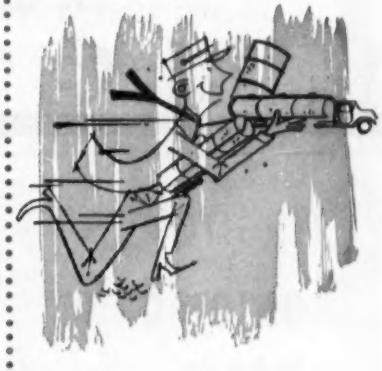

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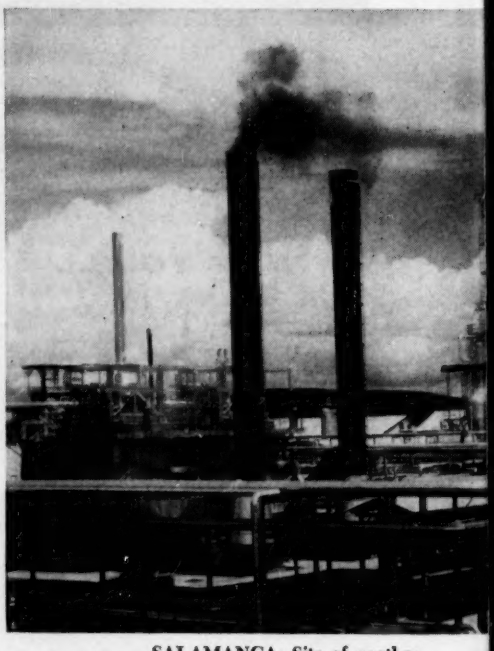

SALAMANCA: Site of another

FOREIGN . . . . . .

Fertilizer/Mexico: According to the Mexican government finance agency, Nacional Financiera, Mexico is still short some 156,000 tons of fertilizer per year, needs to double its current production if domestic requirements are to be met. Cost of expansion: over $100 million.

To expedite expansion, the finance agency recommends the following steps be taken:

- That Permex (the government-owned monopoly—*see cut*) build another ammonium sulfate plant at Salamanca, and investigate the possibility of deriving nitric acid from the coke distillation process now being carried on there.
- That the government-backed fertilizer plant, Guanos y Fertilizantes de México, S.A., consider establishing a new nitrophosphate plant (to utilize coke gases) at Coahuila.
- That privately owned companies "be encouraged" to build nitric acid, nitrophosphate facilities.

Coming onstream recently, Guanos y Fertilizantes' 35-40,000-ton superphosphate plant at Cuautitlan will ease the fertilizer pinch in Mexico somewhat this year, but government officials are worrying about the future. Taking the long-range view, they estimate that the impoverished lands of Mexico will some day need over a million tons of fertilizer per year.

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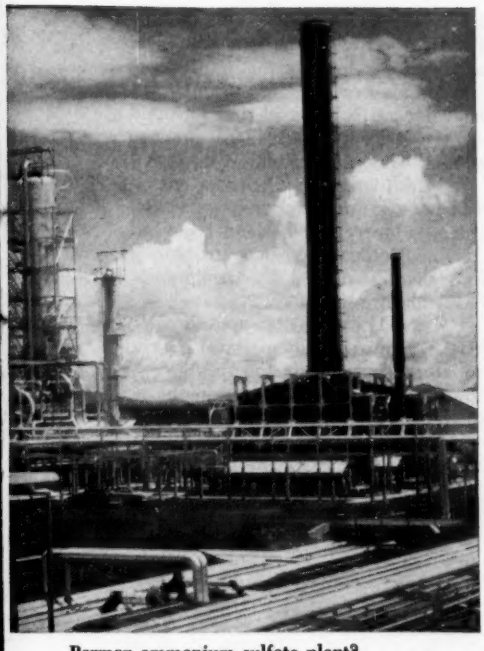
Potash/Japan: Japan will import 230,-



Permex ammonium sulfate plant?

000 metric tons of potash, under its October-March import budget, the Ministry of International Trade and Industry has decided. Of the total, 75,000 tons will come from West Germany; 75,000 tons from France; 60,000 from East Germany; 20,000 from Spain.

•

Caustic Soda/Argentina: U.S. caustic soda producers may shortly expect to receive substantial orders from Argentina due to the recent decision of the Argentine Central Bank to accord foreign exchange for import permits. The U.S. and Great Britain had been Argentina's principal suppliers of caustic soda until recent years when import restrictions pared imports from 45,922 tons (in 1952) to 17,900 tons (in 1953).

•

Chemicals/Hongkong: With stocks at a low level and the beginning of a brisk trading season in sight, foreign firms in Hongkong are issuing a flood of orders (amounting to over a million Hongkong dollars) for fertilizers and dyestuffs from Great Britain and Western Europe. Deliveries are scheduled for late October.

Although Hongkong's prices offered are generally lower (running some 10% below June and July), the size and number of orders are such that chemical companies in Italy, Switzerland, France and Holland are openly anticipating "better business" in the last quarter of 1954, thanks mainly to the "pick-up" in trade through Hongkong.

GR-S UNITS—such as U.S. Rubber's plant at Neches, offer a complex problem.

Up for the Third Time

Coming up for the third (and perhaps final) round in Washington this week are negotiations over sale of the government's 27 synthetic rubber plants. With a Dec. 27 negotiation deadline impending, it's no secret that government officials are anxious to spur bidding interest. But one thing's certain: if the Disposal Commission believes that it isn't getting a full, fair value for the facilities, it won't hesitate to recommend to Congress that it hang on to its plants.

Why? The memory of the days just after World War II (when companies picked up plants at 40¢ or less on the dollar) still rankles in the minds of many congressmen. And Congress, if it feels that the sales price falls short of a "reasonable recompense," can veto whatever agreements the Rubber Disposal Commission makes.

One item in favor of negotiations working out this time, however, is obvious. Whereas previous go-rounds between the commission and prospective bidders covered a wide range of topics (such as the meaning of bid provisions, source of raw materials, and contracts on finished-products, *CW, March 27, p. 26*), this time the main question will be simply that of price.

Still a Question: What price will be satisfactory has never really been uncovered though. Throughout recent months, the Disposal Commission has been exceedingly close-mouthed on the subject. Says one bidder: "It's like a poker game—where you have to bid without knowing whether anyone else is going to bid against you. The only way you know you are high bidder is when the commission fails to call on you for a raise."

Other Washington observers, who have talked to many bidders, are willing to bet that there's still a big gap between value offered and value sought. Says one company representative: "It's pretty well conceded that the total of all high offers on the government's 27 synthetic rubber plants is still well below $400 million (the unrecovered cost to the government)—albeit above the plants' $160-million book value. What's probably holding things up is the sale of 'ordinary' (Gr-S copolymer) plants. Most of the interest is centering around the three other main types of plants up for sale—which produce butadiene, styrene, and butyl rubber." They are popularly considered to be more attractive.

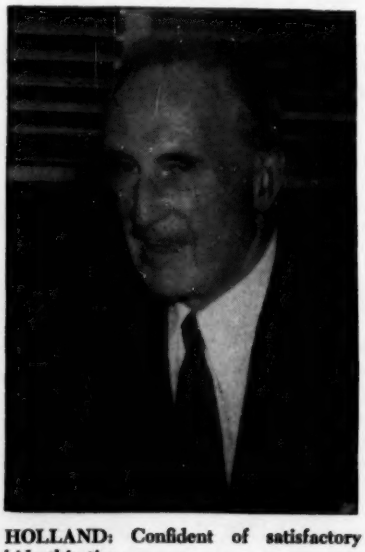
Another Damper: Putting a more tangible damper on chances for sales immediately are the legislative aspects involved. Says one chemical follower of doings on Capitol Hill: "Regardless of how much they manage to raise the ante between now and Dec. 27, the commission stands little chance of winning Congressional approval. The death of Rep. Paul Shafer (R., Mich.) has left a big hole in Congress as far as rubber legislation is concerned." Shafer was the man to whom many House and Senate members looked for advice on any rubber bill. And because he pushed the Disposal Bill through, his stamp of approval would have made clearance considerably easier. "No current legislator has nearly as broad a background on the subject . . . or the prestige needed to ram the program through."

In addition, the Congress which will have to approve rubber disposal come January may be under control of the Democrats, some of whom have loudly labeled the program a "Republican give-away."

Eugene Holland, executive director of the commission (and its chief negotiator) shrugs off the pessimists, however. "It's natural that companies are waiting to see what the other fellow is bidding. That companies are really interested in buying the government-owned facilities is evident by the fact that some of them have asked for negotiating sessions as many as seven times."

Ventures another government official: "What's standing in the way of completing negotiations now is that the big rubber companies simply don't care whether or not the copolymer plants are sold. The best bids for copolymer units have come from such nonconsumer plant operators as Phillips Petroleum."

The commission has one weapon to hold over the heads of the rubber companies—and . . . one that's largely been overlooked. Disposal, according to present regulations, can be completed by selling only 58% of the Gr-S capacity—some 500,000 long tons/year. Even assuming that some "white elephants" (such as the 122,000-LT, Institute, W. Va., plant) won't be sold, there's still enough leeway for the



HOLLAND: Confident of satisfactory bids this time.

government to threaten to mothball any plant on which the bid's not high enough—which would include some now being operated by rubber companies.

Another possible threat: if it could be clearly shown that disposal failed because the rubber companies were reluctant to buy, there might be strong government pressure to boost its synthetic rubber prices.

It looms as an intriguing negotiation struggle; one in which the government is determined to get what it regards as its fair shake with industry, and one in which it's balking at being crowded.

Timetable Unchanged

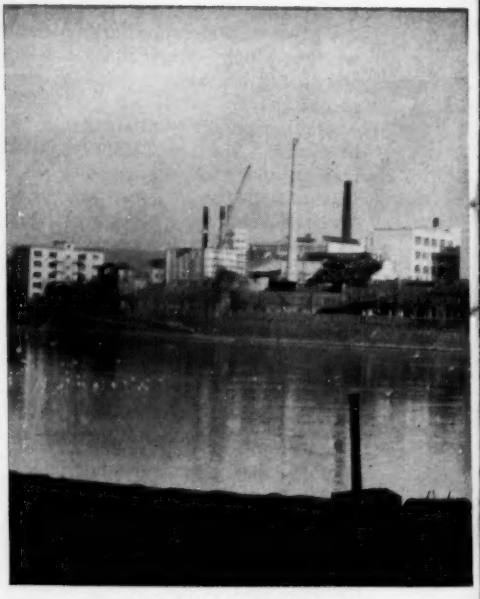
Despite the fillip the new atomic energy law has given to industrial exploitation of the atom, most industrialists still feel that profitable use of atomic power—without subsidy—is still about 10 years off. That was the sentiment of last week's meeting of the Atomic Industrial Forum held at New York's Plaza hotel—a meeting that drew over 500 registered members to a two-day session to appraise the various facets of Atomic Energy in Industry.

Most speakers agreed that under the stimulus of the recent "share the expense" proposal of Lawrence Hafsted (Atomic Energy Commission director of reactor development) four or five companies will initiate power reactor projects within the next two years. However, even the most optimistic nuclear power advocates don't forsee that more than 20% of the nation's total electric energy will come from atomic fuels before 1975— "and a more reasonable objective by that time would be 10%."

John Landis, of Babcock & Wilcox Co.'s Atomic Div., believes that "20 research or package reactors will be started in the U.S. within the next 30 months." (Package reactors are small atomic power plants designed to generate power in areas where electric costs are prohibitively high.)

William Borden, of Westinghouse's Atomic Div., however, thinks the high costs of atomic research will be a restraining factor in the next several years. Moreover, he says, "Although we have a new law, the neutrons with which we work do not know the law has been changed."

Eugene Hotchkiss, vice-president of Vitro Corp., seconds those views, but for a different reason. Reactors, he maintains, are only now in their second stage of development. "True, economically competitive power generating plants aren't even on the drawing boards yet."



CIBA IN BASLE: Heart of a 650

Swiss Dyes: How

In marked contrast with its European competitors, the Swiss dyestuffs industry is at present enjoying a period of notable prosperity. Sales are increasing (to all sectors of the world with the exception of the U.S.); and the shares of the Big Basle Three (Ciba Ltd., Geigy A. G., and Sandoz) are rising spectacularly.

All three concerns substantially increased their sales last year (Ciba's gross income rose from 80 million Swiss francs* in 1952 to 82.5 million in 1953; Sandoz from 41 million to 45.8 million, and Geigy from 27 to 37.6 million). And their production volume increase was even more impressive, since prices on the world market fell considerably last year.

But rosy as the picture looks today, the outlook is not without its shadows Competition is increasing everywhere on the Continent; there is at present an excess of capacity in the European dyestuffs industry; and Switzerland, having neither coal nor oil, is handicapped by having to import almost all its raw materials. Making the export question even more critical: only 5% of the Swiss dyestuff production today is used domestically.

Seat of the Matter: To understand the peculiar position the Swiss dyestuffs industry occupies, a glance backward is necessary.

Until World War I, the activity of the Basle chemical producers was confined to the processing of intermediates

* $1 = 4.28 Swiss francs.

million (Swiss franc) enterprise.

Firm a Foundation?

imported from abroad—mainly from Germany. Collapse of the German chemical industry, and the subsequent inadequacies of France and other neighboring countries, however, forced Swiss chemical executives to re-evaluate their position. Facilities were built to manufacture some important starting materials; subsidiaries were set up throughout the world to (1) act as an insurance source of raw materials in case traditional sources (Germany) should dry up again, and (2) supply that range of products in countries where (for protectionist tariff reasons) Swiss companies could not compete.

For some years, pursual of such a program put a severe strain on the financial position of the Swiss companies. But thanks to a favorable tax climate (Swiss authorities maintain a liberal attitude on taxes), and increased demands for dyestuffs following World War II, Swiss companies today are back on their feet.

But the system's set up so that subsidiary plants abroad have assumed the function of buffering domestic production. In recent years the parent companies have preferred to invest available expansion funds in their subsidiaries (usually in the U.S.) . . . banking on American-produced goods to shore up European sales.

That it's paid off is evident. At the end of 1953, Ciba had a capital in share of 60 million Swiss francs and 21 million in reserve. Affiliated companies virtually ring the world—from

BUSINESS AND INDUSTRY . . . . . .

three Latin American affiliates (in Rio de Janiero, Buenos Aires, and Mexico City) to Ciba Industria Chimica in Milan. Sandoz's share capital stands at 40 million Swiss francs (over 28 million in reserves), and Geigy's gross income last year was 37.6 million.

On the basis of international competition, therefore, Basle's "Big Three" seem well in line to hold their own.

But what's worrying them (and what they can't control) is that world capacity to produce dyestuffs today exceeds demand by some 50%. This worldwide surplus is making it necessary to attack the problem of reducing costs in earnest—especially in manufacturing starting materials and intermediates.

For a while, the trend may be sidetracked by "freely contracted agreements on concentration of manufacture."

But unless vast new markets open up soon, Swiss dyestuffs manufacturers are not at all confident that their current rosy position is enviable. States one company official: "There's no doubt that Swiss firms are riding high today. But how long the joy ride will last is problematical."

LABOR . . . . . .

Organizing Slowdown: Relatively few chemical plant workers have been trickling into labor unions in recent weeks. Production and maintenance men of the Southland Co. have organized a new local of the International Chemical Workers Union (AFL) at Laurel, Miss.; and at Bartlett, Calif., employees of Columbia-Southern Chemical Corp. voted to switch from the left-wing International Union of Mine, Mill & Smelter Workers (Ind.) to District 50, United Mine Workers. Net gain for organized labor: about 50 new members.

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Survival or Defeat: This being "National Employ the Physically Handicapped Week," retired Marine Corps Gen. Melvin Maas—chairman of the sponsoring committee—is asking industry to try to find jobs for the 160,000 partly disabled persons—including 40,000 war veterans—who are now registered for employment. Observing that these people make up a manpower reserve that "might well mean the difference between survival or defeat in a conflict with a numerically superior foe," Maas noted that some 10,000 disabled veterans of the Korean action are now in training and will be looking for jobs in the near future.

WIDE WORLD

MAJ. GEN. MAAS: For ex-GI's with physical handicaps, he asks training jobs.

One Strike Ends: A 6¢/hour wage increase and other new benefits brought an end to the 75-day strike by members of UMW District 50 at the Hammond, Ind., plant of Barrett Div., Allied Chemical & Dye Corp.; but various other strikes of chemical significance were still dragging on last week.

• Taking a turn for the worse were negotiations between contractors and AFL construction unions in the dispute that has retarded work on several petrochemical expansion projects near Beaumont, Tex. The operating engineers turned down what the contracting companies called a "do or die" wage offer, while the boilermakers say they can accept all proposed terms except those relating to health and welfare.

• Allied Chemical's Semet-Solvay Div. plant at Ashland, Ky., was shut down by the first strike at that plant in 41 years. Members of the United Gas, Coke & Chemical Workers (CIO) walked out after rejecting the company's offer of a two-year contract providing for an immediate wage increase and fringe benefits said to be worth 6¢/hour plus an additional 5¢ rise next year.

• In what management called an answer to a series of wildcat walkouts and alleged sickness complaints from employees who are members of the United Auto Workers (CIO), De Vilbiss Co. has closed down its rubber division at Toledo, O., employing about 82 workers.

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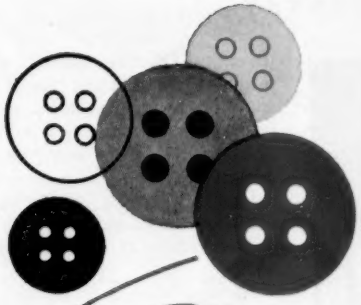
Joint Fund for Layoffs: One of the na-



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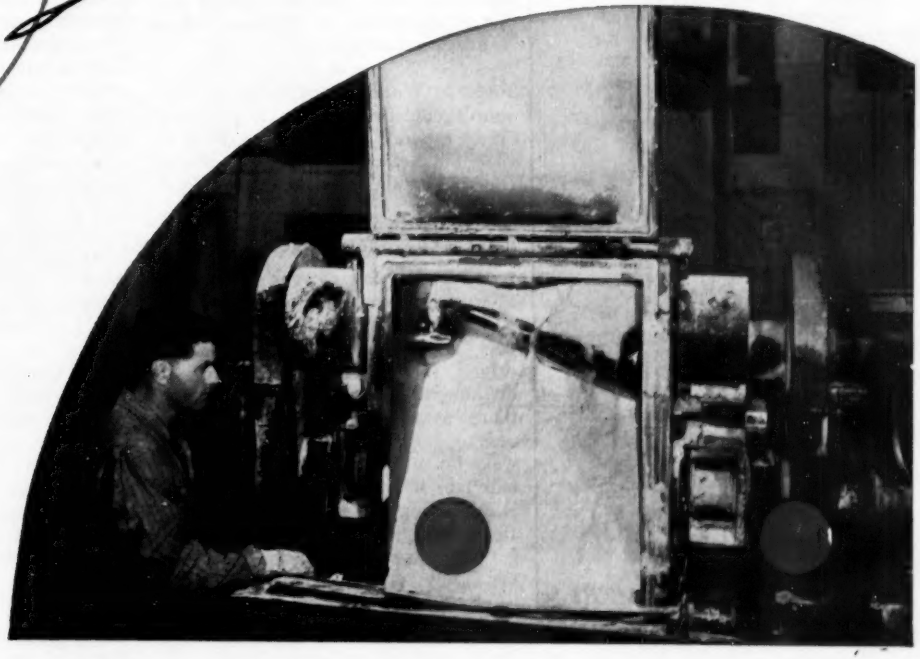

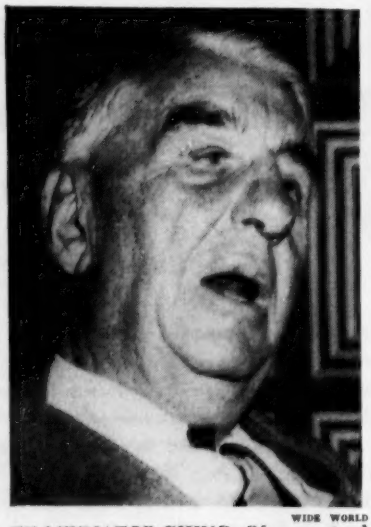

WIDE WORLD

EX-MEDIATOR CHING: Of guaranteed wage plan, he says "preposterous."

tion's leading authorities on industrial relations, speaking to members of the Drug, Chemical & Allied Trades Section of the New York Board of Trade, has attacked the scheme for a guaranteed annual wage as "a preposterous proposal." Cyrus Ching, former director of the Federal Mediation & Conciliation Service, suggested to DCAT delegates at Pocono Manor, Pa., that management and labor instead might be able to develop some kind of joint fund to provide for employees temporarily laid off. Ching also was critical of federal labor laws and of the way in which the Roosevelt Administration had interpreted the old Wagner act "as an obligation to organize unions in every industry."

•

Right to Work: Latest factor in Missouri's controversy over a proposed "right to work" law: a statement from the Roman Catholic church opposing the bill as one that tends to kill unions.

Flaring up Again

As a corollary to last week's California Pharmacy Board hearings on a proposal to tag antihistamines, somnifacients, and adrenergics as "dangerous drugs," (*CW, Oct. 2, p. 34*) juvenile delinquency officers are now claiming that "some California doctors are making huge profits from the sale of wake-up pills (sometimes called goof balls) to teen-agers."

Presenting the testimony to a Senate subcommittee, studying the problem of juvenile delinquency, Police Sgt. Joe Hampton (supervisor of the Los Angeles Police Juvenile Div., and president of the southern California Juvenile Officers Assn.) said the problem stems from the California state law, which allows doctors to sell drugs to juveniles without restriction. Said Sgt. Hampton: "Some doctors are buying lift pills from pharmaceutical houses in 10,000 lots at $1.75 per thousand—and selling them to youngsters at the rate of 50 for $5."

Naming names, and citing instances, Hampton told Sen. Robert Hendrickson (R., N.J.) that in one case a doctor was known to have sold 1,300 lift pills to a girl for $10. "Not only is it contributing to southern California's delinquency problem," he maintains, "but it's casting an unsavory light on the drug companies."

"If California doesn't see fit to amend its Dangerous Drug Act, juvenile authorities have two other approach routes open. Either the state can appeal to drug companies directly, or seek federal intervention.

Unions at Crossroads

It's course-charting season for the labor unions, and the paths they choose at their conventions this fall will help set the stage for negotiating next year's chemical labor contracts and wage re-openers.

In general, unions this year appear to be groping for bold new policies to pep up the organized labor movement during a period that otherwise has been so unstimulating that union membership rolls have been at little more than a standstill.

There's even concern among union leaders about their present members' union spirit. Facing dissatisfaction and lagging interest within the ranks, convention delegates have been toying with these schemes, all of which would have impact on industry:

- Speeding up the unity drive, through merger of individual unions and through hastening the proposed unification of the AFL and CIO.
- Bucking harder for economic benefits, notably higher wages and more liberal pension plans.
- Launching new organizing campaigns; for example, the AFL at its recent Los Angeles convention adopted a resolution pledging redoubled efforts to unionize office workers and clerks in large companies.
- Making union membership seem more "respectable" to prospective members; for instance, the United Steelworkers (CIO), meeting at Atlantic City, N.J., voted to exclude all Communists, Fascists, and Ku Klux Klansmen.

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Celanese* CHEMICALS

wages, two big labor federations have expressed conflicting viewpoints. While both the AFL and the Canadian Congress of Labor naturally want higher wages all around, the AFL says that wage increases are needed to boost purchasing power and prevent a possible depression, and CCL President A. R. Mosher warns that economic conditions may make it necessary for some unions to forego wage hikes or even accept lower pay rates in order not to put companies out of business.

All three of the major chemical labor unions have been thinking about mergers that would strengthen their bargaining positions. District 50 of the United Mine Workers already has absorbed some harbor tugboat workers' local unions along the East Coast; United Gas, Coke & Chemical Workers (CIO) voted in favor of merger with the Oil Workers International Union (CIO); and the International Chemical Workers Union (AFL) reportedly has been exploring possibilities of linking up with certain smaller AFL unions in related fields.

Over-all unification of AFL and CIO —a labor goal that so far has seemed remote if not visionary—has received some impetus in recent weeks. The AFL delegates welcomed a pro-unity letter from CIO President Walter Reuther, and urged that merger negotiations proceed "with dispatch." Steelworker President David McDonald demanded that the proposed merger be achieved in a matter of months, not years. CIO will have its say on these topics at its year-end convention Dec. 6-10 in Los Angeles.

KEY CHANGES . .

Craig S. Rice, to manager, market research, The Armour Laboratories, Chicago.

Howard C. Woodruff, to vice-president and director, Key Chemicals Corp., Washington, D.C.

Kemble S. Lewis, to sales manager, Plastics Div., Diamond Alkali Co., Cleveland.

Calvin L. Dickinson, to director of engineering, American Potash & Chemical Corp., Trona, Calif.

David P. Barrett, to sales manager, Industrial Chemicals Div., Davison Chemical Co., Baltimore.

John L. Porter, to assistant director, Chemical Research Div., Kaiser Aluminum & Chemical Corp., Baton Rouge, La.

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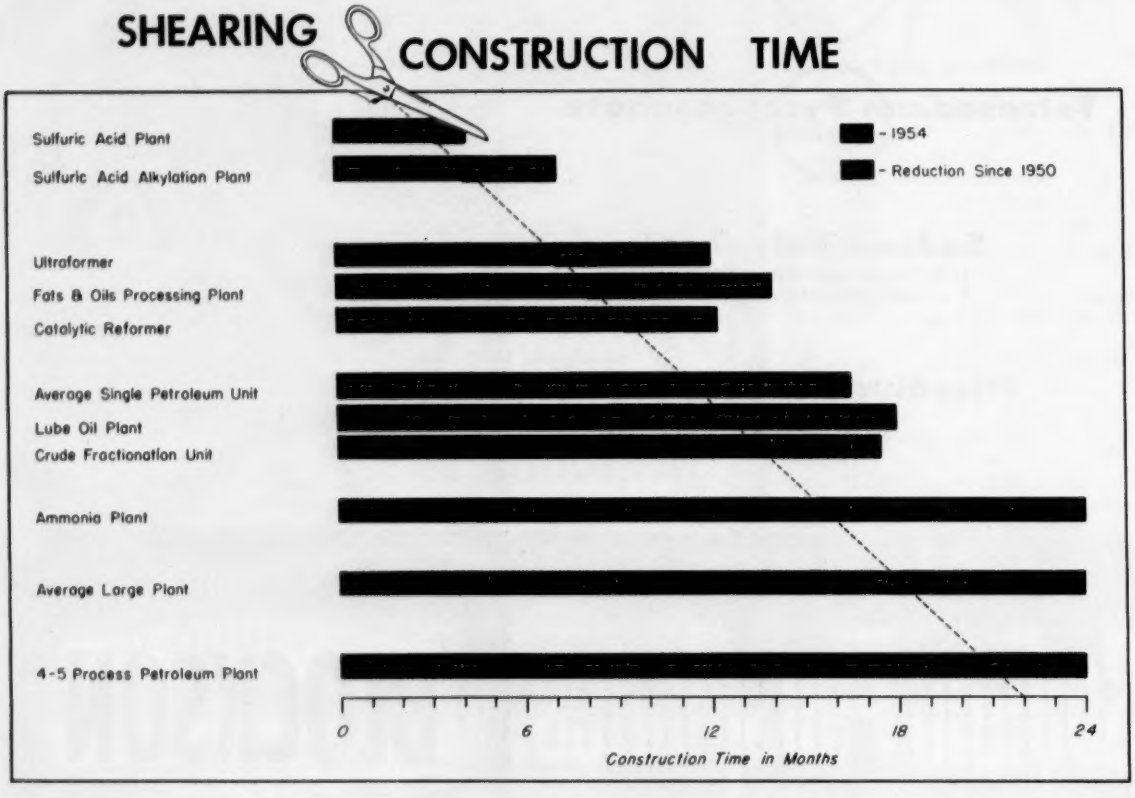


Builders Tighten Their Timetables

Today you not only have to build a better mouse trap, you have to build it faster than the next fellow. For speed has become a salable commodity; time saved is money in the bank. And chemical engineering and construction companies are progressing apace, taking advantage of every opportunity that will enable them to erect plants faster.

The consensus of the leading builders queried by CW last week is that it now requires from 25 to 40% less time to complete chemical plants and petroleum refinery units than it did in 1950. Or, as is more often the case today, complex installations can be completed in the same time it formerly took to put up their uncomplicated prototypes.

The Lummus Co. (New York, N.Y.), for example, points pridefully to an ultraformer it built for the Pan-Am Southern Corp. at El Dorado, Ark. Lopping 5 months off the 12 that would have been needed to erect the same plant a few years ago, it completed the job in just 200 days. Foster Wheeler (New York, N.Y.) presently estimates 15-16 months for the completion of a typical ammonia plant that would have taken 20-24 months in 1950. And sulfuric acid plants, according to a large West Coast builder, are "built right off the shelf, just like one big Erector set."

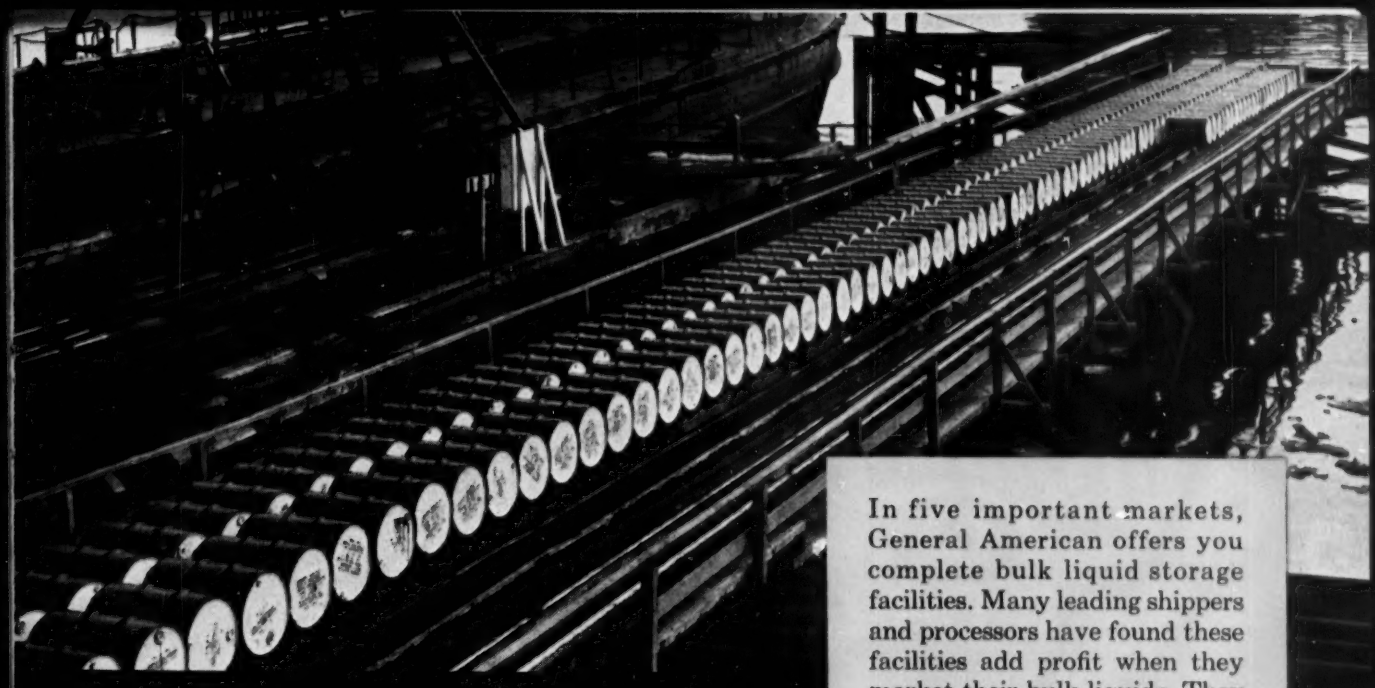
Easier Materials: Improved material supply is probably the most important of the several inter-related conditions responsible for this construction speed-up. During the Korean War, orders were delayed as much as 9 to 12 months when suppliers were pushing for 100%-plus capacity to meet government demands. With production currently running at 70-80% of capacity, there is no longer a log jam of back orders, schedules are better able to cope with emergencies.

Most alloys are now as available as carbon steel; copper- and nickel-alloy are off the critical list. Iron, steel, brass and bronze pipe (three to six months on delivery in 1948 to 1952) now comes through in four to six weeks. Light-wall stainless steel pipe, unavailable five years ago, is a standard stock item today. Warehouse-stocked structural steel speeds jobs where the time it saves is worth the premium (about $30/ton more than mill-rolled).

Equipment fabricators, too, are abetting the builders' cause, have cut delivery time by as much as 75%. Pumps that used to be promised in 6 to 12 months can be obtained in 10-20 weeks. Compressors and large forgings clip 4 to 6 months off the former 14-month delivery.

Boilers are one of the few items still causing slight delay. But even they have been taken out of the bottleneck category. Foster Wheeler builds boilers ahead of orders, can make delivery of standard units in a few weeks instead of several months. And large boilers can be assembled from prebuilt parts well within the time allowed for most jobs.

Better Labor: Another vital factor contributing to speedier building is the present labor market. Although conditions vary greatly throughout the country, there has been general improvement in both the availability and the



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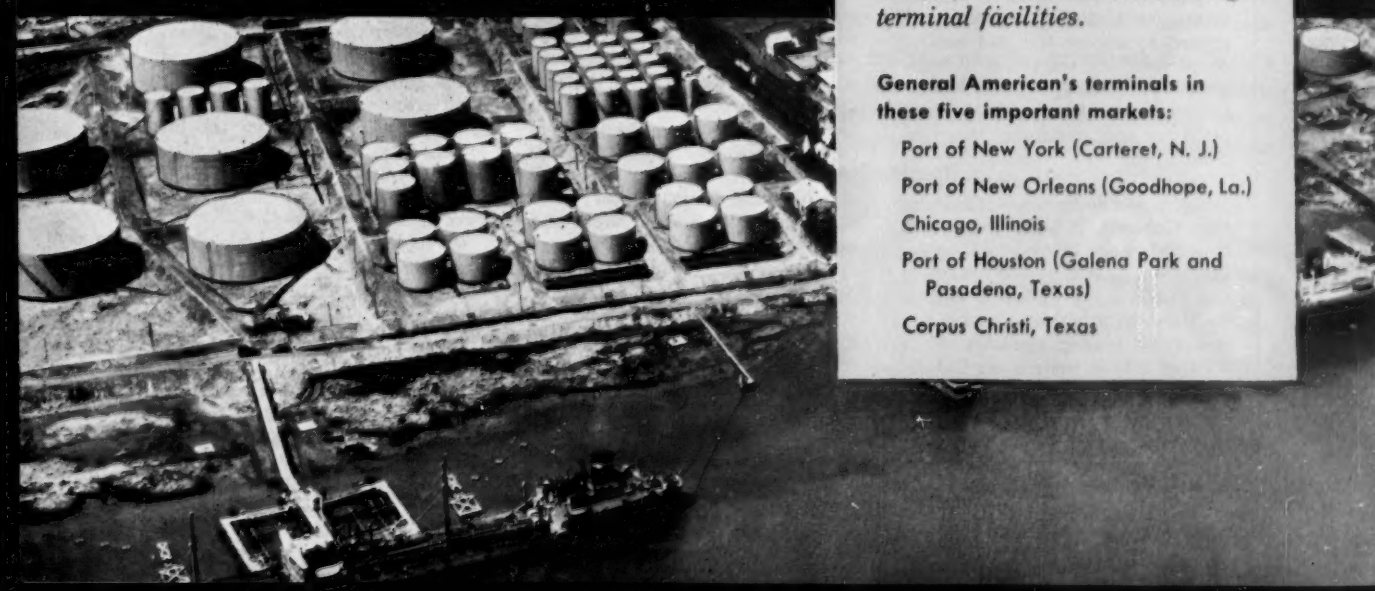
- Chicago, Illinois
- Port of Houston (Galena Park and Pasadena, Texas)
- Corpus Christi, Texas



productivity of workers. There is, for instance, no shortage of welders, pipefitters or draftsmen. And skilled laborers are becoming more experienced, better trained.

Productivity has been stepped up considerably in some areas (Southwest and Far West), is still a spotty problem in others (Midwest). One company estimates that higher productivity of workers can knock as much as 2 months off a 10-month job. But labor is the most unpredictable element, the greatest potential bottleneck that the builder has to deal with. Strikes, on the job or in equipment manufacturers' plants, can disrupt the best-laid plans. And negotiation of fringe benefits in labor contracts is another complication that was not so pronounced five years ago.

Customers Gain: The one that stands to gain the most from this pick-up in construction timetables is the

How to Build a Chemical Plant in 90 Days

This may not be the speed record for building a chemical plant, but it is mighty fast stepping even for an industry that prides itself on cutting construction time:

On Sept. 23, '53 (*CW, Oct. 3, '53*), a multimillion-dollar explosion and fire destroyed an important part of the manufacturing facilities of Lucidol Div. (Tonawanda, N.Y.), Wallace & Tiernan, Inc.,* by Dec. 22, '53, the first batch of organic peroxides was run in a new plant (Geneseo, N.Y.) started from scratch on undeveloped land. This is how it was done:

Sept. 23: Management decides to build anew; rebuilding at the old site will involve delays due to cleaning up and the like. Jan. 1, '54 is set as the target for completion; but it is hoped that this time can be bettered.

A team of top executives headed by Fred Merckel takes off from W&T headquarters in Belleville, N.J., on their way to Buffalo to set up and coordinate the building program. In England on business, W&T's Chief Chemical Engineer David Crampton reads about the fire, makes plane reservations for the following day.

Back in Buffalo, Merckel and Frans Visser't Hooft, managing director of Lucidol Div., choose teams, split them up into small groups to survey the surrounding countryside in search of suitable sites. Crampton arrives in Buffalo; he and Visser't Hooft get the job of building and designing the new plant.

Oct. 7: One of the survey groups comes across undeveloped farmland near Geneseo. It looks good: it is bounded on one side by the Geneseo River; on another, by a branch of the Pennsylvania Railroad; and on the third, by a highway; water and power are readily available. Contract of sale is written on Oct. 9; on Oct. 12, work is started on bringing in roads, power and water to the site; land is purchased Oct. 16.

Meanwhile, in Buffalo, Crampton and Visser't Hooft pick out engineers, clerks, laboratory chemists and others of Lucidol, and set up a "New Plant Team." Headed by Lucidol Sales Manager Charles Raybolt, this group starts buying equipment and supplies.

Turning now to the actual construction, Crampton favors a single-story building over the two-story type that was lost. This will, he feels, permit simultaneous erection of building and installation of equipment without having to wait for completion of the second floor.

Siegfried Construction Co. (Buffalo) is hired on a cost plus basis; its associated architect, John Schwartz, is asked to design certain service buildings. Later, he will design the buildings that will surround the process equipment. For help in preparing drawings of the actual process facilities, Crampton hires St. John, Platt & Carlson (Buffalo).

Taking up slack in an already taut timetable, problems in connection with the proposed single-story construction are bubbling up and must be solved. Crampton, together with his layout men, must make layout changes, choose desirable arrangements, solve certain other technical problems.

The new plant team reports some items are unobtainable for delivery on satisfactory dates. Other items are substituted; Crampton and his crew make necessary design changes. A steady stream of sketches and drawings flows from headquarters to the architect and to the plant site. Monday, Crampton designs a specific item; Tuesday, it is purchased or fabricated, and within 24 hours it will be sent to the job for a fitting. This happens frequently; is almost routine by now.

Switching from design problems in Buffalo, Crampton and Visser't Hooft turn to supervision of construction at Geneseo, and then back again. As soon as sufficient drawings are available, two shifts are put on at Geneseo, are now working seven days a week on all phases of construction. No piping drawings are made; installation is on the basis of line flow sheets only.

Dec. 1: Final design elements are finished. Buildings are not yet complete, but much of the equipment is already in. The weather, pleasant through most of November, has turned bitter cold, and is delaying completion of the building and tune-up of the apparatus.

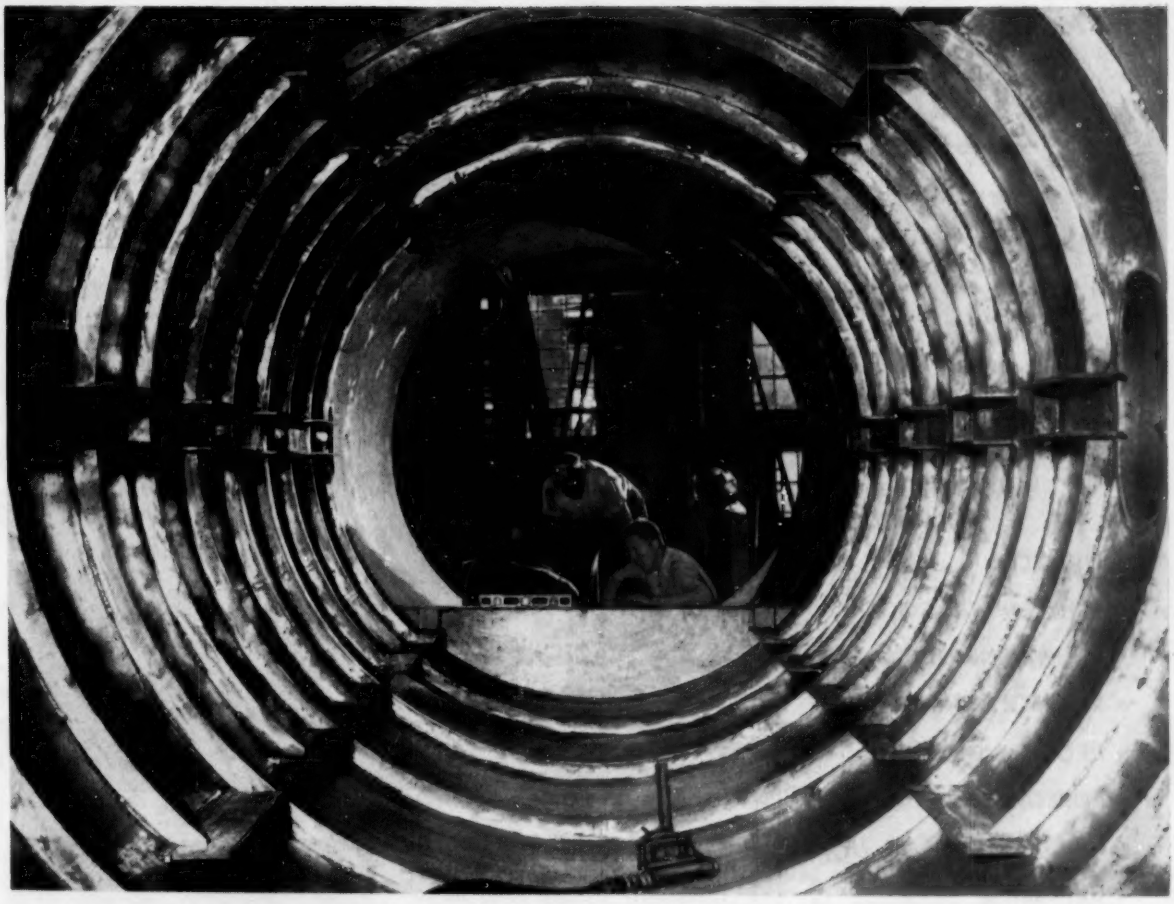
Dec. 10: Equipment is ready for partial testing and calibration. The large refrigeration facilities are all set. Dec. 17, the 35 things still to be done are put on a final "punch list"; by Saturday the 19th, 31 of the list items are checked off. Saturday and Sunday, a series of small mishaps cause delays.

Dec. 21: Everything is checked out and the first batch is started in the evening. Early next morning, the batch is pushed through additional processing and is finished shortly after noon. It is rushed to the analytical lab, passes all tests. That evening, Crampton and Visser't Hooft play hosts at a dinner for their hard-working personnel.

The 90-day wonder was finished. Some minor adjustments were necessary and were completed the weekend after Christmas. The following Monday, Dec. 28, the plant went onstream on a permanent basis and has been running steadily ever since.

A second unit was completed Feb. 20, '54 after all overtime work had been stopped; a third was added April 20. Meantime, all service buildings were completed, and the plant operating force moved from temporary quarters into the new office building.

*At the time, Lucidol was a division of Novadel-Agene Corp.



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But there is more to the "inside story" at Vulcan. It is the story of—

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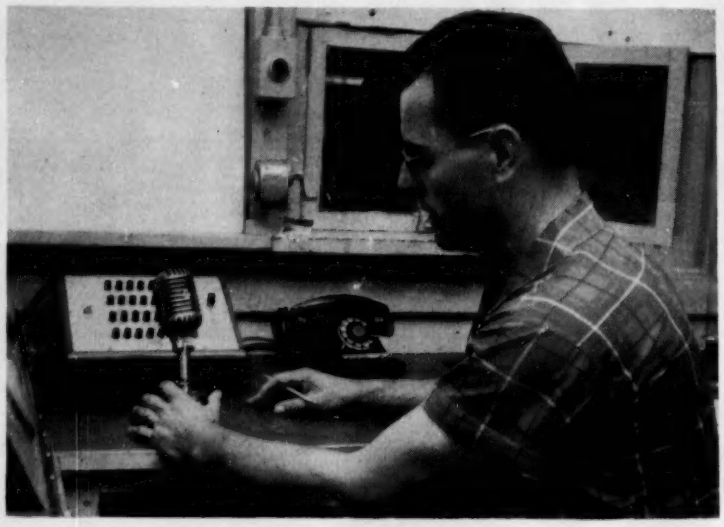
customer himself. It was to meet the requirements of the customer, in fact, that the builders have had to build more complicated plants, ones that give higher yields and ones that utilize cheaper raw materials. For in the stiffer competition of today's buyers' market, availability alone is not enough to sell a product. You often have to make a product available before your competition.

Also, the customer usually has a heavy capital investment to consider. And the sooner the plant gets into production, the sooner the pay-out period starts.

Take, for example, a $10-million plant scheduled to pay out in three



On the Air

Particularly striking amid its surroundings, the new radio tower hard by Texas' Highway 288 stretches 280 ft. skyward, cross-fastened steel bar to steel bar and cable-braced firmly to the earth. On top is the receiving antenna; below, the transmitting antenna; and flaring out from the sides are the directional screens that will beam microwave transmissions to still-unbuilt towers at Bay City and Thompsons. It's one small part of three networks, 15 base stations and about 100 mobile units that will make up one of the most intricate radio webs ever spun by a single chemical company. The three networks:

- By early November, the (Freeport) Texas Div., Dow Chemical Co., hopes to have its improved radio network completed and in operation. At that time, dispatchers on the motor transportation net will be able to call vehicles selectively for field assignment, save drivers long trips to the office for assignments that often carry them back to within a few blocks of where they were.
- Operators in the gas and water department, using their pipeline net for operational control of raw material- and fuel-carrying lines, will have, along with their microwave links, remote controls for cutting in on two unattended stations in the same net.
- The emergency network will have a broadcast range of 30 miles, will be used by plant protection, fire and other service departments.

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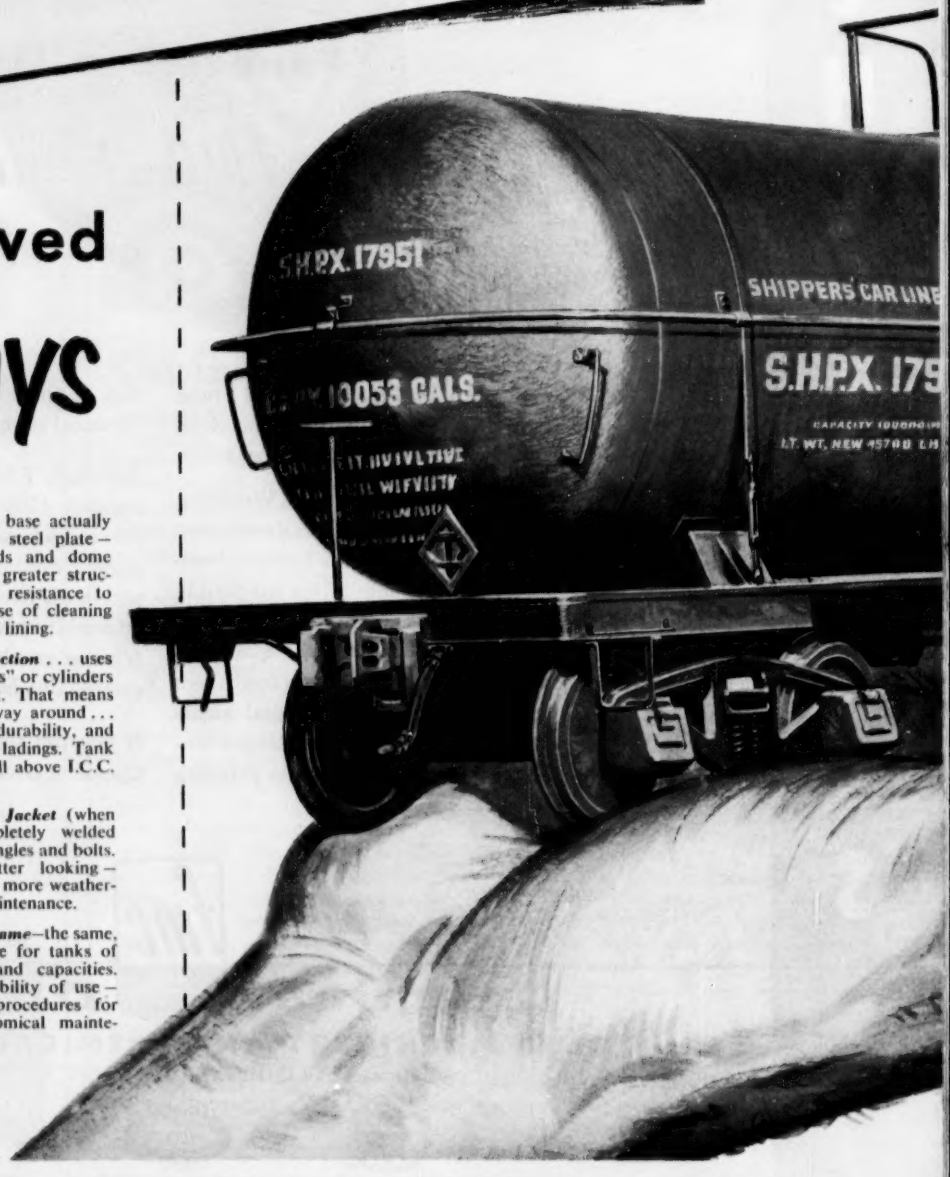

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years. If two years are required to build the facilities, the customer's money is tied up for a total of five years. If, on the other hand, building time could be reduced to 18 months, the investment would be recovered in 4½ years. This six months saved, of course, is the nonproductive period—the time when a plant is contributing nothing toward its own upkeep.

As a result, there has been some use of the bonus penalty clause in construction contracts. Some customers will pay $1,500 to $2,000/day for completion ahead of schedule. There seems to be no detectable trend, however, to the use of such clauses, because the enforcement of penalties is complicated by strikes and other noncontrollable factors. Most contractors would rather figure their jobs closer and surrender their chances for a bonus.

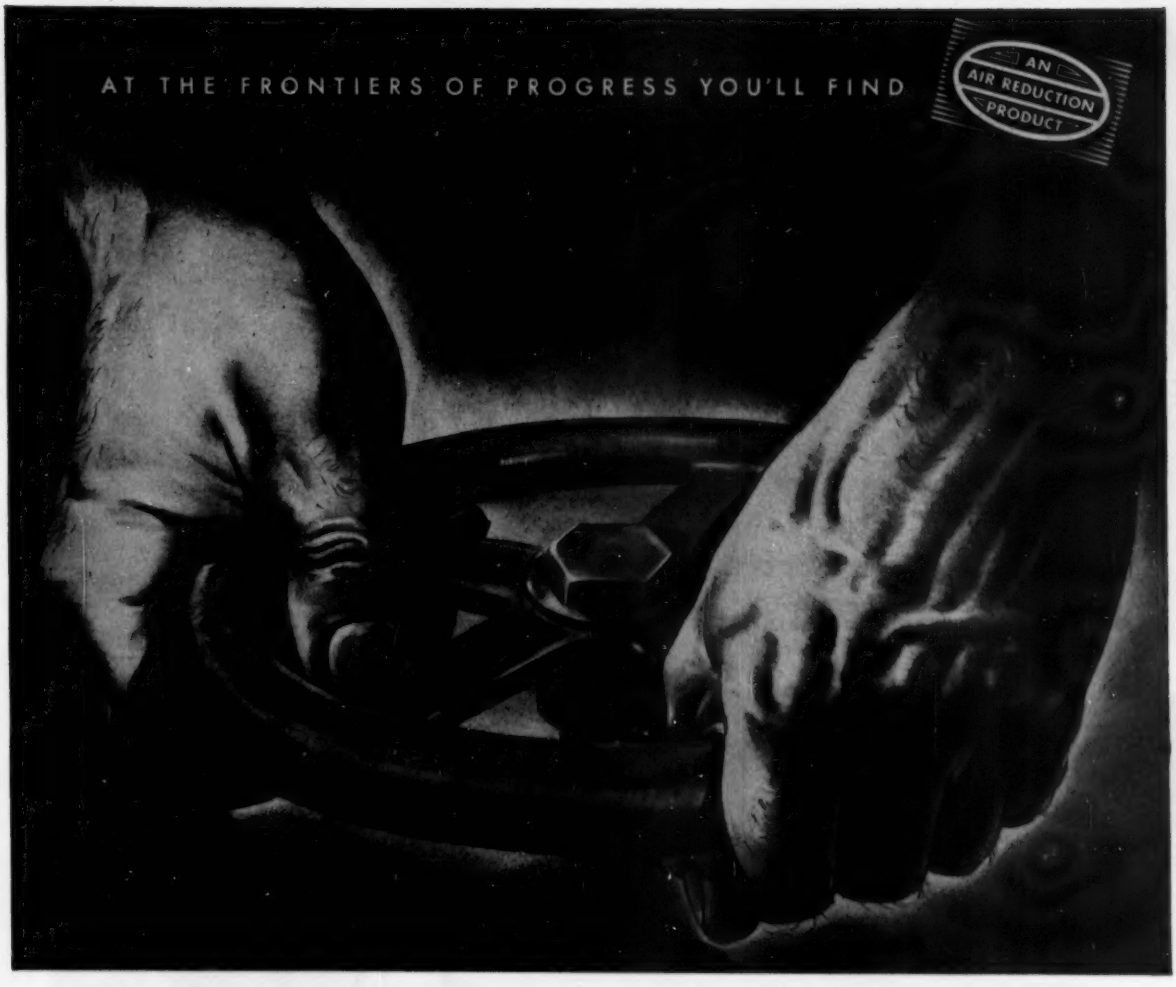
The Best Teacher: What this stepped-up construction proves is that, in the final analysis, there's no substitute for experience. The construction jobs that were awe-inspiring only a few years ago are now little more than routine engineering.

Chemical firms as well as construction firms have learned how to make an ally rather than a foe out of weather on construction jobs (*CW, Oct. 3, '53, p. 45*). They've also taken to means of short-circuiting design errors by devices like model plants (*CW, July 11, '53, p. 46*).

But most important of all, they've gained a lot of know-how from their past building jobs. As you'd expect, they're getting better as they go along.

Oddly enough, however, none of the men queried by CW claimed any speed-up in design schedules. It takes as long to design a plant as ever. But in this case, too, experience plays an important role. For the engineers are often able to anticipate problems. On new processes, for instance, it's a common practice for structural steel—the first thing needed on the job—to be the last thing specified. As designers become more familiar with the process, they have a better understanding of the requirements and can therefore help accelerate the structural layout.

As one builder puts it: "Building a plant is like mixing a stew. You have to have the right ingredients at the right time. With the big construction program following the Korean War, we've gained a lot of experience. We can mix a much tastier stew and do it in less time." With the prospect of continued big construction programs ahead, builders hope that experience and improved supplies of labor and materials will help them to mix the stew instead of getting them in it.



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PRODUCTION . . . . .

Outguessing Hazards

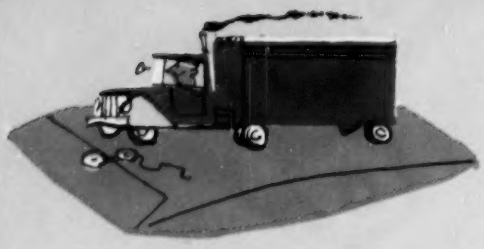
Although no one disputes the growing importance of industrial hygiene, few outside of industry are doing much about it. And even within industry, few devote as much thought and time to the subject as does Industrial Hygiene Foundation, Mellon Institute (Pittsburgh), which, in its latest report* disputes some of the present practices of industrial hygiene, but not their ultimate goal.

The industrial hygiene practice has been directed primarily toward the probe of existing working conditions for hazards, relates the report, then developing and installing any required corrective measures. Very often the result is a poor compromise. The

*Principles of New Plant Design for Health Protection, by Theodore Hatch (from the Transactions of the Technical Conferences of Eighteenth Annual Meeting of Industrial Hygiene Foundation).

Half a Sphere

THIS UNUSUAL 16-sided dome at Kaiser Gypsum Co.'s new Seattle plant was built specifically for storing raw gypsum. Of full cantilever construction, it has a clear span of 175 ft. across its diameter, rises seven stories above ground level. The idea behind it is that it permits 25,000 tons to be deposited from a single elevated point to form a conical stockpile unhampered by interior supports. And the shape, say Kaiser engineers, offers the greatest economy when considering initial cost, maintenance and usable storage space.



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PHOSPHORIC ACID—Typical uses: Manufacture of yeast, sugar, soft drinks, gelatin and pharmaceuticals. Rust-proofing, chemical polishing, petroleum refining. Manufacture of phosphates, glue, ceramics, metal-treating compounds, and fertilizers.

A DRY SUBJECT

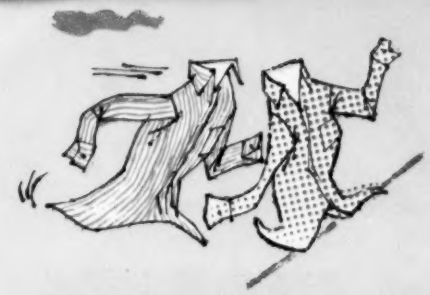
Dry powder bleaches have been developed recently. These bleaches can be used safely with synthetic fibers and at the same time effectively bleach cottons. And, because these bleaches are in powdered form, they're easier to package . . . without danger of breakage. Victor "tripoly" in powdered bleaches does a dual job . . . it acts as a water-softening agent and also maintains alkalinity for bleaching efficiency. *It pays* to see Victor.

SODIUM TRIPOLYPHOSPHATE—Typical Uses: Soap builder, manufacture of detergents and water softeners, purification of china clay, deflocculant in raw cement slurries, conditioning of oil drilling muds, anti-pitch agent in paper making.

IT TAKES THE CAKE!

Today's cakes, muffins, waffles, and biscuits are easily made by adding liquid to the contents of a box of mix. Mix experts know that the right kind of leavening is important to safeguard shelf life and for uniform kitchen performance. That's why mix makers turn to Victor for the selection of leavening materials tailored to the delicate balance of their brands. Homemakers get uniformly high, light, and handsome cakes, manufacturers gain repeat sales. If you have a leavening problem, consult phosphate headquarters. You'll find *it pays* to see Victor.

SODIUM ACID PYROPHOSPHATE—Typical Uses: Baking acid for doughnut flours, prepared flours. Manufacture of commercial baking powders, and baking creams. Conditioning oil well drilling muds. Acid type metal cleaner.



"SWEET" FINISH FROM "SOUR" START

Victor oxalic acid is helping many laundries deliver sweeter, cleaner, whiter washes. Since laundry soaps are alkaline, oxalic acid is added to "sour" or neutralize the rinse water, discharge the bleach, or to remove iron stains. This produces better results for the laundry . . . greater satisfaction for the customers. *It pays* to see Victor.

OXALIC ACID—Typical Uses: Radiator cleaning compounds, leather processing, bleaching, laundry sour, washing coal, removing rust stains from marble. Manufacture of metal polishes, blue-prints, dyes, and blueing.

IT PAYS TO SEE ...

VICTOR

Dependable Name in *Chemicals* for 56 Years

VICTOR CHEMICAL WORKS
141 West Jackson Boulevard, Chicago 4, Illinois

TAILOR-MADE TO BOOT!

Natural raw rubber has many advantages . . . but man-made synthetic rubber has even more. Originally a war-born substitute, synthetic rubber has proved to be more than a match for nature. Even sporting goods, made with synthetic rubber can be tailor-made for a specific job. In addition, synthetic rubber offers properties of acid-resistance, heat-resistance . . . performance that natural rubber cannot match. Victor formic acid and potassium phosphates are used as chemical intermediates in synthetic rubber production. Another instance where *it pays* to see Victor.

POTASSIUM PHOSPHATES—Typical Uses: Yeast foods, plant nutrient solutions, medicinals, fermentation processes, builder and clarifier of liquid soaps, dyeing compounds, fluxing agent, and deflocculating agent.

plants and offices of VICTOR CHEMICAL WORKS

† Sales Offices
• Plants

if TEXTILES are your special interest
be sure to see the next page

VICTOR

goes through the mill

(textile mill, that is)

Victor supplies many of the chemicals needed in modern textile processing. For example, Victor formic acid has long been preferred as an acidifying and exhausting agent in leading dyeing and finishing plants. Makers of synthetic fibers rely on Victor for surface-active agents for package dyeing of nylon. Ammonium phosphates aid in chrome dyeing wool and flameproofing fabrics.

Now, Victor has another "extra" for the textile industry. "Carrier spotting", a former hazard of one-bath Dacron-worsted union dyeing, has been eliminated through use of Victor diammonium phosphate as the regenerating agent. Mills that formerly stock-dyed blends can now hold them in "grey goods" form and dye them quickly to meet changing shade requirements. *It pays* to see Victor.

VICTOR SERVES THE TEXTILE INDUSTRY

OXALIC ACID—bleaching . . . DIAMMONIUM PHOSPHATE—flameproofing, buffer for chrome dyeing of wool, one-bath dyeing of Dacron-wool blends . . . SODIUM PHOSPHATES—buffers in dye baths, synthetic detergents, dyeing, water treatment, stabilization of hydrogen peroxide baths, wool scouring . . . VICTAWETS® wetting agents, dye carriers, penetrants . . . FORMIC ACID—dyeing . . . FYREX® compounds—flameproofing . . . VICTAMINE D—Textile softening agent . . . ALUMINUM FORMATE—waterproofing.

PRODUCTION . . . . .

ultimate objective in the practice of industrial hygiene, states Author Hatch, is to anticipate potential hazards in the course of process development and in the design of new process equipment, then to make any necessary alterations in advance.

Like any devoted parent, IHF was pleased to see its idea come to maturation, watch this approach applied to the design of a new plant by Mutual Chemical Co. of America (Baltimore). Involved were the processing of a toxic material (chrome ore) and the company's objective of designing to minimize environmental toxicity.

Planned Procedure: At the outset, says Hatch, certain principles were formulated, served as development guides:

- Capacity of every process step to produce and release contaminants was determined; as far as possible, procedures with the smallest inherent toxic potential were chosen.
- Capacity of equipment to release toxic material was minimized by careful selection of equipment, by altering design and construction where necessary.
- When neither of the first two principles proved practical, accessory controls were incorporated in the equipment.
- Control equipment that required minimum attention and maintenance was selected.

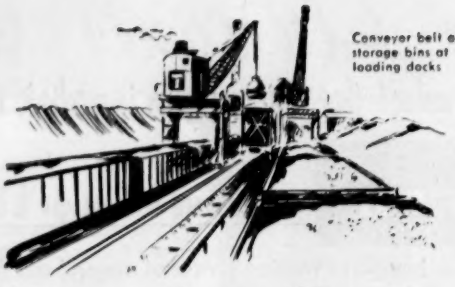
As a result, declares Hatch, the control program is operating satisfactorily; regulation of health hazards is as integral a part of day-to-day operations as is production. Initial cost was probably higher than that of more conventional control systems but, he avers, the resulting operating conditions are inherently safer.

EQUIPMENT . . . .

Clean Presses: A line of mechanical presses ranging from 8 to 40 tons with fully enclosed fly-wheels, pulleys, cams and gears is being offered by Haller, Inc. (Plymouth, Mich.). Chief claim for the machines is cleanliness of operation; they were, says the company, designed specially for pharmaceutical processing.

•

Engineer's Choice: Industrial Process Engineers (Newark, N.J.) thinks it has the answer to small-scale data gathering in its new semipilot plant. This small plant, says IPE, is suitable for many different processes, will enable production men to obtain data on design, effect of variables, and process economics. A complete experimental unit, it requires less than 55 sq.ft. of



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for Industrial Use

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floor space, is 12 ft. high, and incorporates the following equipment:

- A 25-gal. jacket reaction vessel that has an agitator with interchangeable impellers, variable speed drive, and a flush-bottom valve.
- A jacketed column that can be packed or left empty.
- Two 15-gal. receivers, condensate pump, and a shell-and-tube condenser.

•

Motorized Valves: Eclipse Fuel Engineering Co. (Rockford, Ill.) is marketing a series of motorized valves for automatic fuel control of gas combustion systems such as gas-fired furnaces and kilns. Featured is a spring-loaded plunger and neoprene seat, which, claims the firm, assure fast, positive shut-off in the event of electrical failure.

•

Nuclear Meters: To count gamma radiation at maximum sensitivity while changing samples at top speed, R-C Scientific Instrument Co., Inc. (Playa del Rey, Calif.) has developed a specialized shield with a split lid, combined it with its model LAX14P Scintimeter, a scintillation well counter. At peak value where specific gamma activities are at levels as low as 10^{-5} microcuries/ml., the meter uses a large scintillation crystal that heretofore was protected by bulky lead shielding that hampered sample changing. By using a shield with a split swivel lid, says the firm, sample changing is simplified, speeded.

- For detection of radioactivity on a highly sensitive but broad scale, Radiac Co., Inc. (New York) has developed a multiple Geiger tube count rate meter. Dubbed the Nucliometer, it has 24 Geiger tubes, a compensator that can be used to set the count to zero in a particular area nullifying variations of background counts.
- Useful for general purpose survey work in radioisotope laboratories as well as geological field trips, the model 2612 G-M survey meter offered by Nuclear Instrument & Chemical Corp. (Chicago) is a portable, battery-operated meter designed for measuring alpha, beta and gamma radiation. The instrument comes with a choice of probes for beta and gamma radiation over 0.2 mev., or a thin mica end window counter for all three radiations.

•

Hook-on Volt-Ammeter: A pocket-size volt-ammeter for measuring alternating current and voltage, which has a hook-on assembly of a toroidal wound split-core current transformer with directional steel laminations, has been

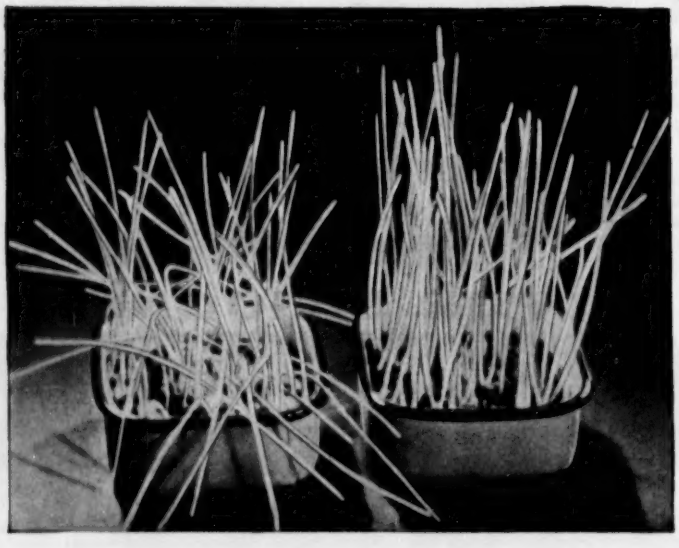
Life ...on the

More bread on your table is the promise of a proved liquid seed disinfectant.

Panogen® Seed Disinfectant, the original widely-tested liquid product, controls fungus diseases of grain as effectively as dry mercury compounds without risk of dust that makes them dangerous to use. It holds promise for . . .

Bigger Yields Of Healthier Wheat

Insoluble mercury dusts have long been used to control fungus diseases such as blights, smuts, root rot and seed decay which slash yields of wheat, barley, oats, cotton, sugar and other seed crops. But mercury dust creates a health hazard during treating and sowing. Soluble mercuric compounds reduce this hazard. Such a compound is Panogen—made by reacting Cyanamid's dicyandiamide with an organic mercury compound. This liquid compound, easily and safely applied to seeds in mixing drums, contains a dye which tints the treated seeds pink so they're easy to tell from grain meant for food. Developed in Sweden and recently introduced here by Panogen, Inc., Ringwood, Illinois, Panogen has won excellent reports from leading agricultural experiment stations.



Left, wheat seedlings are sickly and weak because a fungus, which causes blight, has attacked them. **Right,** seedlings grown from Panogen-treated seed are sturdy and healthy.

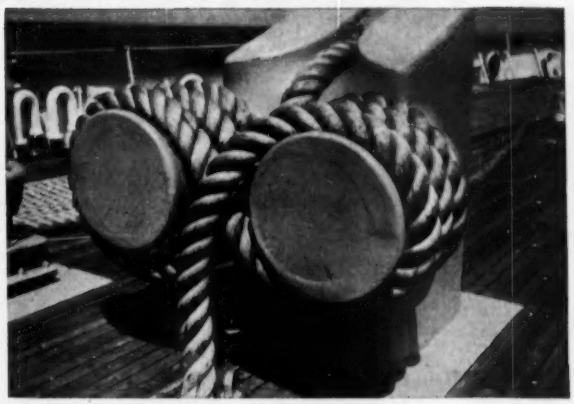
Chemical Newsfront

Facepowder-fine, unwettable, wax-smooth metallic "soaps"

IN MASONRY

SEAL MASONRY WALLS: because of their fineness, metallic soaps, or stearates, mixed into paints, penetrate the finest pores in masonry. There they form films that water can't wet. Zinc stearate, for example, is deposited as tiny, leaf-like plates that overlap like shingles, effectively waterproofing the most porous brick or cinder block. Other types, mixed with cement, waterproof poured concrete.

IN HEAVY DUTY ROPE



KEEP ROPE FROM TEARING ITSELF APART: individual fibers in ropes subjected to constant flexing soon wear themselves out from rubbing together unless they are "oiled." A mixture of stearates, hot oil and wax forms a flexible, non-greasy coating on each fiber. The stearate not only improves lubrication, slowing wear, but also waterproofs the fibers, preserving their strength.

An important manual for users of mineral acids and heavy chemicals

You will find this handbook a constantly useful reference. It contains complete tables of property ranges and conversions for sulfuric, nitric, hydrochloric and other mineral acids as well as some heavy chemicals. It details methods of analysis and includes the new International Symbol and Atomic Weight Table. If you would like a copy, write us on company stationery, including your name and title, to: American Cyanamid Company, Heavy Chemicals Department, 30 Rockefeller Plaza, New York 20, N. Y. And would you please mention where you saw the advertisement?

CW 10-54

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☐ Cyanamid Zinc Stearate as a Lubricant in Powder Metallurgy
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Name.....*Position*.....
Company.....
Address.....
City.....*Zone*.....*State*.....
In Canada: North American Cyanamid Limited, Toronto and Montreal

PRODUCTION . . . . .

designed by General Electric (Schenectady, N.Y.). It is capable of measuring current on both insulated and noninsulated conductors without cutting the conductor or interrupting work, says GE.

PROCESSES . . . .

Screening the Catalyst: From Armour Research Lab's Erik R. Neilson comes word* on a new process of making a furfuryl alcohol resin intermediate. In the accepted process of making it, furfuryl alcohol is polymerized in the presence of a strong acid. A solvent (usually water) is added to moderate the reaction and the intermediate must be washed (to remove the catalyst) and dried. In Neilson's method, the resin is formed simply by heating the alcohol in the presence of activated alumina, which can be screened out when the desired degree of reaction is attained.

Neilson figures that his process will be cheaper than the present one, also more flexible. He points out that work by the T. F. Washburn Co. (Chicago) is under way to evaluate the resin intermediate from his process as a starting point for a furfuryl alcohol pipe.

At least one producer who knows the field well, however, feels that Neilson's process will turn out to be more expensive than other improved versions of the conventional method. The work by Washburn may well prove which figures are correct.

•

Japanese Titanium: The Japan Metallic Titanium Manufacturing Corp. (Tokyo) reports a new process of refining titanium. Essentially, it consists of reducing titanium dioxide with calcium metal to form a powdered titanium (approximately 300-400 mesh). Presently the firm is turning out 1.5 tons/month, is shooting for 10 tons/month by early next year.

The firm has incorporated the titanium powder into a 95% aluminum-5% titanium alloy tagged Titanize, which, it claims, is durable and exhibits good resistance to corrosion.

Managing Director Makota Okubo says the process of making the powder is entirely unique. Most of the titanium manufactured here is in the form of sponge, made by the magnesium reduction of titanium tetrachloride. (In Canada, however, Dominion Magnesium has a process of making titanium powder by reducing pigment-grade titanium dioxide with calcium.)

* In *The Frontier*, published by ARF, Neilson disclosed the process at a meeting of the Society of the Plastics Industry in the fall of 1952.

Vinyl coating users agree . . .

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MORE MILS PER GALLON WITH AMERCOAT 33

Amercoat's higher solids content gives you a thicker, heavier coating—more mils for every gallon applied.

THIS MEANS YOU SAVE MONEY TWO WAYS ON MAINTENANCE PAINTING

Lower Material Cost. You save on material because it takes fewer coats of AMERCOAT 33 to build the required film thickness.

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In addition to more mil thickness per gallon, you get more protection per gallon. AMERCOAT 33 is formulated specifically for maximum chemical resistance and for severe weathering conditions. In major industries from coast to coast – chemical, petroleum, pulp and paper, food, and many others – maintenance engineers look to AMERCOAT 33 for low cost, long lasting protection for all types of steel or concrete structures.

Amercoat pioneered the development of protective coatings especially designed for severe corrosion problems. Today it is the only organization that offers you... a complete line of corrosion resistant coatings...nationwide distribution... trained technical men to give you on-the-job assistance throughout the United States and Canada.

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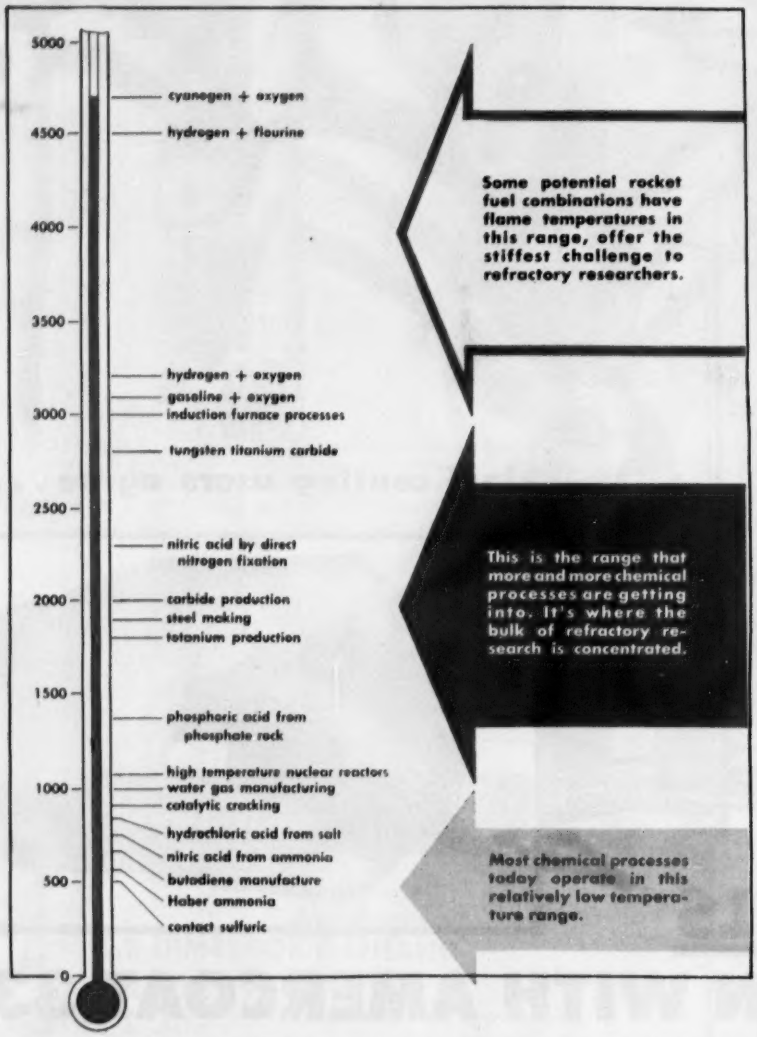
Write today for the AMERCOAT 33 Technical Bulletin which gives a complete description of the coating's chemical and physical properties.



HIGH-TEMPERATURE chemical processes are kindling a blaze of research aimed at fashioning a . . .

Better Match for Heat

Extra-hot new processes are setting tough standards for refractory probers. Here's how they are meeting the challenge.

On paper, almost any job looks easy; problems begin with the doing. Nowhere is the gap between theory and practice more painfully clear than in the field of high-temperature chemistry. Itching to capitalize on an assortment of potentially rewarding reactions in the 1000-3000 C range (*see centigrade temperature chart*), the high-temperature researcher must wait in frustrated silence while his counterparts in the refractory industry go about the arduous job of developing materials to contain his chemical infernos.

The push against the temperature ceiling is not unfamiliar to chemical men. By this week, however, the collective force of new refractory developments was bringing a few extra-high-temperature processes into the range of commercial feasibility, underscoring the need for more effort in such areas as atomic energy, rockets and a scattering of chemical process applications.

In chemical manufacture proper, the standout high-temperature advance is Westvaco Chemical Division's (Food Machinery and Chemical Corp.) new Lawrence, Kan., nitric acid plant (built for the Army). Operated at over 2000 C, the process converts atmospheric nitrogen directly into nitric oxide, reacts the latter with water to give the acid.

Heart of the unique process is a two-chamber, magnesia - brick - lined furnace filled with magnesia pebbles. The refractory pebble bed permits the rapid chilling of nitrogen from 2100 C, by which direct fixation is made possible.

Zirconia Looks Good: Zirconia (zirconium oxide), also eyed for this task, is among the strongest contenders for other chemical process applications. Most of these are still conjectural. Direct synthesis of cyanogen from carbon and nitrogen, and extraction (by sharp chilling) of ozone from hot air are two possibilities.

A more tangible potential opening for a hardy refractory is in the Wulff process of making acetylene from natural gas. A thermal cracking method, the Wulff technique is mighty hard on refractories, which must stand up under continuous operation at cracking temperatures of 1100 to 1300 C.

Right now, Lummus Co. (New York), one of the three* firms authorized to design and construct Wulff-type plants, puts its faith in alumina† as the refractory of choice. But a better candidate for the job would not be unwelcome.

Norton Co. (Worcester, Mass.) is putting a great deal of stock in zirconia for high-temperature chemical applications. A leader in the development of refractory zirconia, Norton points out that it withstands temperatures up to 2600 C and has three times the insulating quality of alumina or magnesia.

Newest and most widely used variety of Norton's zirconia is the stabilized form. Made by electrical fusion of a mixture of 94.5% zirconium oxide and 4.5% calcium oxide (the remainder is mostly silica), it resists dimensional change on heating.

But neither zirconia nor any other known refractory is a complete match for another relatively recent process poser: handling molten titanium. The metal's high melting point (about 1800 C), coupled with its powerful reducing action, precludes use of con-

* The other two: Fluor Corp. (Los Angeles) and Girdler Corp. (Louisville, Ky.).

† It analyzes at 98.75% aluminum oxide, 0.7% silica, contains traces of iron, magnesium, calcium, etc.

LUMMUS TO BUILD FIRST HIGH-PRESSURE ACETYLENE DERIVATIVES PLANT FOR GAF

The first commercial installation in this country for the manufacture of acetylene derivatives through high pressure techniques based on Reppe Chemistry has already passed design stage. The entire project including engineering and construction has been entrusted to The Lummus Company by General Aniline and Film Corporation—pioneer of high-pressure acetylene technology in America.

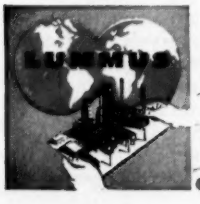
GAF research and development groups have carried investigation from laboratory scale to the building of the first U. S. pilot plant at Linden, New Jersey in 1949. Since that time, more than 30 new chemicals have been produced in semi-works quantity.

Experience gained in daily operation of the pilot plant forms the basis for design of the $6,000,000 commercial unit at Calvert City, Kentucky—scheduled to come onstream in late 1955.

The plant involving high pressures will supply chemicals now unavailable in industrial quantities. Among the products to be made initially are propargyl alcohol, butynediol, 1,4-butanediol, butyrolactone, 2-pyrrolidone, methylpyrrolidone, vinylpyrrolidone, and polyvinylpyrrolidone (PVP). These products have already achieved industrial applications in such fields as pharmaceuticals, cosmetics, textile auxiliaries, plastics, plasticizers, solvents, explosives, and fine chemicals. In a subsequent step, vinyl alkyl ethers and esters and their polymers and copolymers are also scheduled to be produced at the Calvert City plant.

Lummus is pleased to have been chosen for this highly specialized engineering and construction project. It is the kind of challenge that we thrive on.

The Lummus Company, 385 Madison Avenue, New York 17, N. Y. • *Engineering & Sales Offices:* New York • Houston • Montreal • London • Paris Chicago • Caracas • *Heat Exchanger Plant:* Honesdale, Pennsylvania • *Fabricated Piping Plant:* East Chicago, Indiana.



LUMMUS

DESIGNING ENGINEERS AND CONSTRUCTORS FOR THE PETROLEUM AND CHEMICAL INDUSTRIES

ventional oxides. Cerium sulfide has been suggested as a possibility, and several carbides and nitrides are others. At present, titanium ingots are prepared in water-cooled copper molds. But according to Lee Busch, research director of Mallory-Sharon Titanium Co. (Niles, O.), a suitable refractory would be welcome in the industry, could do a lot toward increasing ingot production.

Rocket Problem: But chemical process men are sitting pretty by comparison with jet-engine and rocket experts who are looking for materials to withstand the extreme heat, thermal shock, and corrosive demands imposed by jet and rocket combustion.

Some refractory-makers consider the task hopeless. Not so researcher William Smiley and colleagues at Stanford Research Institute (Palo Alto, Calif.) where promising results are emerging. One of these centers on the use of modified graphite for jet nozzles.

Ordinarily too susceptible to oxidation, graphite has consistently been ruled out of this use. Smiley preserves the extremely high melting point of graphite, reputedly bolsters the element's weakness for oxidation. He reacts the graphite with liquid metallic silicon or aluminum near their boiling points (around 2000 C for aluminum). While in the vapor phase, the metal forms a carbide that impregnates the porous graphite to some extent, yielding an oxidation-resistant protective coating.

Still in the laboratory stage, this process is said to show every indication of being relatively inexpensive in large-scale production.

Another SRI hopeful is a refractory composed of about 75% silicon carbide, 25% molybdenum silicide and a trace of titanium diboride. It's now undergoing actual jet nozzle tests.

Also under surveillance in rocket research circles are cermets, mixtures of ceramics and metals that derive their shock resistance from the metal component. A typical refractory hybrid of this type combines alumina (which is brittle but inert to oxidation) and chromium. Cermets are being researched mostly in the empirical manner, still require a lot of fundamental study on the nature of metal-ceramic bonds to bolster their chance of success.

The implications of these investigations transcend narrow limits. Any refractory good enough to stand up to the requirements of rockets and jets might very well find application in chemical processes, nuclear reactors, solar furnaces, etc.

Where will all of these new special-application refractories come from? Ultimately they will be drawn from a near-limitless pool of compounds possessing the highly tenacious chemical bonds that are the root of the refractory nature. Screening this vast population are scores of private companies, colleges and universities, independent research institutes and government agencies. Some of the fruits of their labor are listed in the table on p. 66.

More Than Heat: Of course, choice of a refractory for any application can depend on more than its behavior at high temperatures. Some other considerations are cost, strength, hardness, density, thermal conductivity and expansion, and electrical resistivity.

An interesting example of a relatively new refractory with an unusual array of properties is boron nitride, pioneered by Norton Co. (*CW, Jan. 20, '52, p. 25*). This micron-size powder, which dissociates at about 3000 C, has lubricating properties like graphite, but is a nonconductor. Light in weight (7 lb./cu. ft.), it is said to be an ideal thermal insulator in electrical resistance or induction furnaces.

If boron nitride's present price ($46/lb. in 50-lb. lots) comes down, it should make further strides as a heat-resistant lubricant, antisticking agent (in molds for molten glass or metal), etc.

On top of all of their other problems, atomic energy refractory seekers must contend with a whole new dimension: neutron absorption. Reactors require refractories that must resist neutrons as well as heat. Recent progress in reactor refractories was the development by Bureau of Standards of a high-temperature neutron-resistant coating (*CW, Aug. 28, p. 72*) of barium, cerium and cerium-chromium oxides.

Despite these comparatively glamorous areas, the heart of refractory research is in those industries that account for the greatest dollar volume of refractory sales.

For glass makers, as an example, Walsh Refractories Corp. (St. Louis, Mo.) is trying to equalize resistance of furnace refractories. Reason: if they all wear out at the same time it would minimize the number of furnace maintenance shutdowns.

Old-Timers Improved: As a matter of fact, most traditional refractories are constantly being improved to meet changing conditions in their normal areas of use. Almost all refractory users are raising operating temperatures 300 to 500 F above the levels of several years ago. For example, high-pressure boilers that were run at 1100 to 1200 F a few years ago, are now at 1600 F, which means their fireboxes have gone from 2000 F to around 2600 F. And in gasoline engines, higher compression

Finishing a Hitch

WINDING UP a summer's hitch at General Food's Central Laboratories (Hoboken, N.J.), chemist Gerasimos Karabatsos (*second from right*) bids farewell to fellow researchers. A native of Greece, young Karabatsos soon begins post-graduate study at Harvard under the auspices of the Anglo-American Hellenic Bureau of Education. After completing his scientific training, he will return to Greece.

Tri-Sure® Closures protect the purity and quality of STAUFFER CHEMICALS

IN industry and agriculture, the name Stauffer signifies uniformity and top quality in chemicals. And to safeguard this quality—in drum shipments from many of their 38 plants throughout the country—the Stauffer Chemical Company insists on *proved* methods of *protection in transit.*

As a result, drum shipments from Stauffer plants are protected by Tri-Sure* Closures—Tri-Sure Coated Flanges and Plugs for chemicals shipped in coated drums, and standard Tri-Sure Closures for other shipments.

Tri-Sure's exclusive assembly of *Flange, Plug* and *Seal* protects the contents from leakage, tampering and losses. And Tri-Sure's superior method of coating flanges and plugs—seals off the contents from the metal of the fittings.

Whether you use coated or uncoated containers, Tri-Sure Closures will assure the delivery of the exact quality and quantity you put into your drums. When you order drums, always specify "*Tri-Sure Closures.*"

**The "Tri-Sure" Trademark is a mark of reliability backed by over 30 years serving industry. It tells your customers that genuine Tri-Sure Flanges (inserted with genuine Tri-Sure dies), Plugs and Seals have been used.*

Spraying lacquer on Tri-Sure Plugs

Protect lined drums with Tri-Sure Coated Flanges and Plugs

If you use lined or coated steel drums, properly coated *Tri-Sure Flanges and Plugs* will eliminate contact of your product with the metal of the fittings. Specify to your drum supplier *Tri-Sure* Flanges and Plugs, factory coated by us to the specification of the drum manufacturer. Coating is laid on evenly, and covers thread throughout. For lined or coated drums always specify *Tri-Sure Coated Flanges and Plugs.*

Always specify **Tri-Sure** Reg. U.S. Pat. Off.

CLOSURES

AMERICAN FLANGE & MANUFACTURING CO. INC., 30 ROCKEFELLER PLAZA, NEW YORK 20, N.Y.

Tri-Sure Products Limited, St. Catharines, Ontario, Canada

ratios require greater heat resistance by sparkplugs. In steel melting, furnaces that previously ran at 2800 F are up to 2975 F, on the average, often pushed to 3100 F. Under these conditions, refractory improvements are a must.

In line with this trend, Harbison-Walker Refractories Co. (Pittsburgh, Pa.) has bettered the heat resistance of its fire clay products by increasing alumina, decreasing silica content. Along with other firms, it now offers a 99% alumina refractory that's finding application in nonferrous metallurgy and glass manufacturing. And the company is also interested in increasing the purity of the silica in the brick it offers the steel industry for open hearth roofs. Higher purity helps the brick withstand stresses at high temperatures.

Something Besides Chrome: Among basic refractory makers there's general agreement that one of the biggest problems facing the industry is the replacement of chrome ore as a primary material. Reason for this is twofold: no suitable chrome ore deposits exist in the U.S. (imports from the Philippines and South Africa are vulnerable in event of war), and even the best chrome ore is high in impurities (primarily silica, iron, lime and alumina) that reduce its effectiveness, create difficult manufacturing problems.

Still another problem in the basic refractory industry is that new products have outstripped the traditional yardsticks used in laboratory evaluation. This means that there often is little correlation between a refractory's performance in research and its behavior under actual operating conditions. It's a situation that needs urgent attention in the light of spurting research.

Some other potentially fruitful areas of research for refractory makers encompass studies of raw material purification, probes of new joining materials, and fundamental investigations of such processes as sintering and attack by molten metals, slags and glasses.

Research activity of this nature clearly demonstrates that refractory makers are taking their high-flying jet-age problems with a liberal dash of down-to-earth probing.

These are the experimental compounds from which tomorrow's commercial refractories will be drawn.

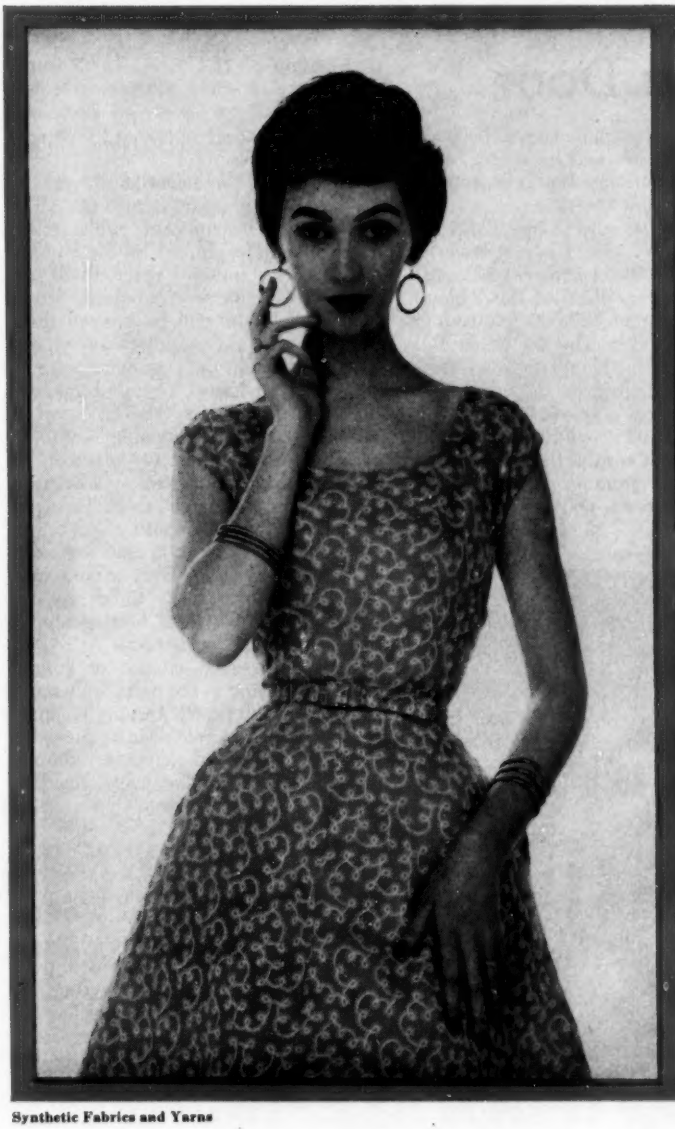
Carbides	Melting Point (C)
molybdenum	2690
niobium	3500
tantalum	3880
titanium	3140
tungsten	2870
zirconium	3540

Nitrides	Melting Point (C)
boron	3000
chromium	—
niobium	—
tantalum	3090
titanium	2950
vanadium	2050
zirconium	2980

Silicides	Melting Point (C)
molybdenum	—

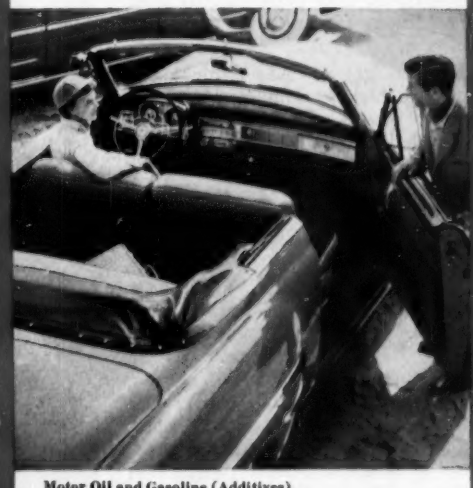
Borides	Melting Point (C)
aluminum	—
elemental boron	2050
calcium	—
cerium	—
chromium	2760
molybdenum	—
niobium	2900
tantalum	3000
titanium	2600
tungsten	2900
uranium	2365
zirconium	3000

Oxides	Melting Point (C)
beryllium	2530
calcium	2580
hafnium	2810
thorium	3050
uranium	—



Synthetic Fabrics and Yarns

Paint, Varnish an Lacquer



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Foot in the Atomic Door

Industry may have an atomic reactor sooner than many expect. That's the message from Armour Research Foundation (of Illinois Institute of Technology), which last week unveiled plans for what it says will be "the first nuclear reactor for industrial research."

To be financed chiefly by industry, the reactor will be made available to companies on a fee basis.

Thus far, however, all such plans are slightly premature. Atomic Energy Commission, which has the last say about all new reactors, has only approved ARF's intention to build. There has been no approval of anything more tangible (e.g., construction design), but informal talks between ARF and AEC presage smooth progress in this direction.

Some insight into ARF's thinking is given by Richard Humphreys, manager of the foundation's physics research department. He reveals that the proposed reactor, rated for 50,000 watts, is intended to be used as a highly flexible neutron and gamma source and not as an instrument for studying reactors themselves.

Lots of Jobs: This of course rules out research on power generation. Rather the envisioned atomic furnace will be employed in such areas as: radiation sterilization of foods and drugs; studies of the structure of plastics, rubber and other high polymer materials; wear and friction investigations; development of metals and alloys; glass and ceramic probes; and the quest for new techniques of medical diagnosis and therapy.

In addition, the reactor should, on the basis of results obtained at Oak Ridge, be an excellent analytical tool for detecting extremely small quantities of contaminants. By radiation techniques, impurities of the order of 10^{-12} g. have been detected in many otherwise pure materials.

More important perhaps will be the reactor's role in the production of short half-life (under two days) radioisotopes. Because of their distance from the major atomic installations, many Midwest companies now cannot get these short-lived isotopes quick enough to make effective use of them. The ARF project may well double the isotope selection available to these potential users.

ARF is not planning to build the reactor, will give the construction job to a contractor. If everything comes off according to schedule, the work will begin sometime this year. By the fall of 1955, the machine should be showing signs of life and by spring of the following year operation is expected to be on a routine basis.

Twenty Payment Plan: Estimated cost of the proposed pile is hovering between $500,000 and 600,000. ARF will put up one-third of this amount, seek the rest in $20,000 grants from local companies. The 20 or so subscribers will be sought from as broad a range of industries as possible. No formal pledges have yet been taken.

The $20,000 stipend is by no means a donation; it entitles the subscriber to a three-year program of work. Moreover, participants will get first call on the new reactor. In line with its established policy of shying away from conflicting interests, the foundation will not itself take on comparable reactor projects sponsored by competing companies.

FABIAN BACHRACH

ARF'S HUMPHREYS: With nuclear technology, a job of public relations.

According to project director Humphreys, "sponsored research will be subject to no security classifications, no competition from military applications, no secrecy of any kind other than that called for in the protection of the individual sponsor's programs."

AEC will get a general outline of reactor projects, but only the fissionable fuel (borrowed from AEC) will be subject to security regulations. Naturally, if anything significant to the defense program should arise, AEC will be promptly informed. But, according to ARF, "technical common sense" will serve as the chief guiding influence.

Building on this theory, ARF foresees the day when reactors will be tame enough to be placed right on plant floors, safely operated by an experienced crew.

Along with the scientific aspects of its entry into nuclear technology, ARF faces a not insignificant public relations job. To be situated in the city of Chicago, the planned reactor will be the first in a densely populated area. ARF's neighbors will be assured that it won't explode or otherwise wreak atomic havoc on the community.

Margin for Error: To guard against an untoward incident, ARF has spared no safety detail. Fissionable fuel and reactor gasses will be contained in a gas-tight tank, which itself will be surrounded by a gas-tight shell. The entire works then goes into a gas-tight steel tank, about 60 ft. in diameter and 25 ft. high. The tank with its contents finally will be buried three stories underground, contain a host of automatic protective mechanisms.

Sporting a good chance of going down as the first in the industrial community, the proposed Armour reactor has no chance to establish its precedence in the entire civilian atomic energy field. That honor belongs to North Carolina State University's model. ARF is hoping that it will have the same good fortune as N.C. State in the welcome reception accorded to the reactor by delighted and intensely interested townsfolk.

Speculation about the type of greeting in store for the reactor will not delay ARF in the job of getting it built. Based on a wealth of nuclear experience gained at nearby Argonne National Laboratory of AEC, ARF is convinced that an atomic reactor can be an invaluable industrial research tool.

•

Late Model: Applied Physics Corp. (Pasadena, Calif.) now makes a new Cary recording spectrophotometer, has named it the Model 14. Claimed for the instrument are good resolving power, high photometric accuracy in the wave-length range of 2,000 A to 2.6 microns.

•

Auto Lab: To house automotive testing equipment needed for its test car fleet, Standard Oil is building a new laboratory near Esso's Research Center (Linden, N.J.). Completion is scheduled for early '55.

•

Erosion Studies: A real threat to high-speed aircraft—erosion of exterior surfaces by rain and hail—is being researched at Cornell Aeronautical Laboratory, Inc. (Buffalo, N.Y.). Recently disclosed test results show that

of nearly 3,000 materials tested, elastomeric or rubber coatings are most resistant to wear at high velocities in simulated rainfall.

•

Low Pressure: Greater prolonged lowering of blood pressure with fewer side effects than by any other known drug—that's the claim for pentolinium tartrate a new drug cited in just-reported studies by Frederick Smirk, professor of medicine at the University of Otago, New Zealand. Smirk, addressing a closed-circuit television symposium on the management of hypertension, described clinical work with the new drug in the past two years with 290 patients. The new drug, averred to be pentamethylene-1:5-bis (1'-methyl-pyrrolidinium bitartrate) is a white, nonhygroscopic, odorless, crystalline powder, soluble in water.

•

Safety Mark: At Whiting, Ind., employees of Standard Oil (Indiana) recently set an all-time safety record for the research laboratories by working more than 4,300,000 man-hours without a lost-time accident. A staff of 480 chemists and chemical engineers, 535 technicians and other assistants established the new mark.

•

New Offering: Compounds having spasmolytic, analgesic, and sedative action can be prepared from glycine amide hydrochloride, now available from the Jasonols Chemical Corp. (Brooklyn, N.Y.). The new amide also leads to such nonpharmaceutical derivatives as resinous products (by reaction with formaldehyde), mercaptoglyoxaline, and aralkyl-substituted compounds.

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Alumina Brochure: Free for the asking is Alupharm Chemicals' (Elmont, L.I., N.Y.) new brochure called "Chromatic Experiments with Aluminum Oxide." The publication describes a number of new filtration and analytical techniques.

•

Synthesis Milestone: Total synthesis of strychnine is a new achievement of Robert Woodward and colleagues at Harvard University. The research project took three years to complete, resulted in a synthesis requiring 30 laboratory steps. Uneconomically low yields coupled with lack of demand (except for limited use in medicine) preclude any commercial significance for the synthetic alkaloid. But the Harvard findings are expected to contribute toward synthesis know-how in connection with other naturally occurring materials.

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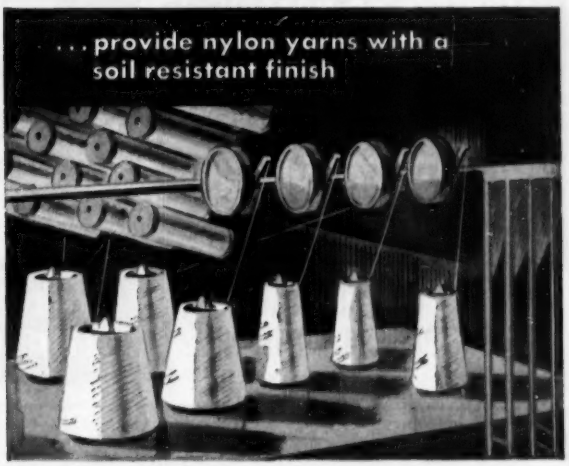

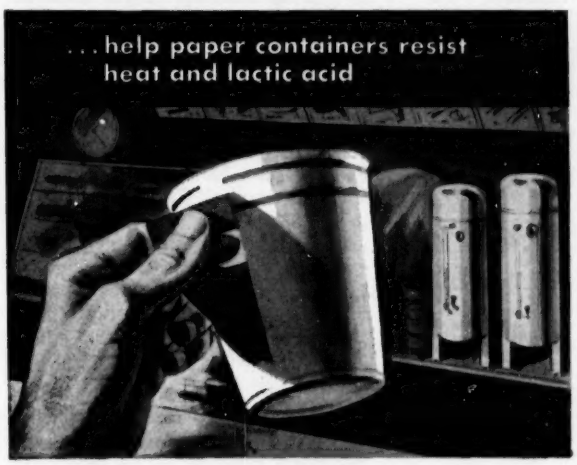

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McGRAW-HILL PUBLISHING COMPANY, INC.
By J. A. GERARDI, Vice Pres. & Treas.

Sworn to and subscribed before me this 14th day of September, 1954.
[Seal] ELVA G. MASLIN
(My commission expires March 30, 1956.)

RESEARCH . . . . . .

Dyeing Data: Just released by American Cyanamid Co.'s dyestuff department (Bound Brook, N.J.) is a technical bulletin (No. 837) describing some preliminary studies on the dyeing of cyanoethylated cotton. At least some affinity for the modified fiber was observed using vat, direct, acid, premetallized, sulfur, disperse, and basic dyes. And in most cases, both the rate and depth of dyeing were greater on the treated fiber as compared with untreated cotton.

•

Hot Stirrer: A way to heat liquids while stirring them magnetically is offered by Arthur S. La Pine & Co.'s (Chicago) new combined hot plate-magnetic stirrer. The apparatus features separate speed and heating controls.

•

New Shaker: A new line of laboratory shakers, designed to simulate the mixing swirl accomplished by the human wrist, is available from Burrell Corp. (Pittsburgh). Both light-duty (takes 8 to 24 Erlenmeyer flasks) and heavy-duty (forty 250-ml. flasks) models are available. Larger- or smaller-capacity shakers will be furnished to order.

•

Antifungal Agent: Mycostatin, a new antibiotic of E. R. Squibb & Sons (New York), promises to be valuable in treating intestinal fungus diseases. Clinical studies show the drug to be effective against several fungi, especially yeasts and yeast-like organisms. Low toxicity and absence of side effects are also reported.

•

Patent Grant: Newly granted to Gallowhur Chemical Corp. (New York) is U.S. Reissue Patent No. 23,863. It pertains to solutions of organic mercury compounds for use in agricultural sprays, slimicides, and other agricultural and commercial products. The original patent (2,411,815) was issued Nov. 26, 1946.

•

Lab Add: Part of J. T. Baker Chemical Co.'s expanded research and development program, a new laboratory building is slated for construction near the company's main plant in Phillipsburg, N.J. Plans include concrete and steel construction, 20,000 sq. ft. of floor space air-conditioned throughout. Provision will be made for inorganic and organic chemical investigations, X-ray, spectroscopic, and other physico-chemical studies. The new lab will also house offices of Baker's research division and information services.

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Epoxidation offers new opportunities, new economies and new markets for manufacturers of resins, plasticizers and stabilizers, pharmaceuticals, insecticides, paints, varnishes, lubricants and organic chemicals.

Becco's basic epoxidation processes are broadly flexible. They have been developed through years of laboratory experience; proved in large-scale commercial application.

Write for Becco's Bulletins on epoxidation processes.

* * * * *

Becco chemists have been working on epoxidation techniques since the first commercial 90% hydrogen peroxide was manufactured by Becco in 1945.

During this time Becco made the first commercial peracetic acid and brought epoxidation processes to commercial application.

Becco was a pioneer in epoxy plasticizers . . . developed the first *in situ* (one-stage) epoxidation process using acetic acid to be made generally available.

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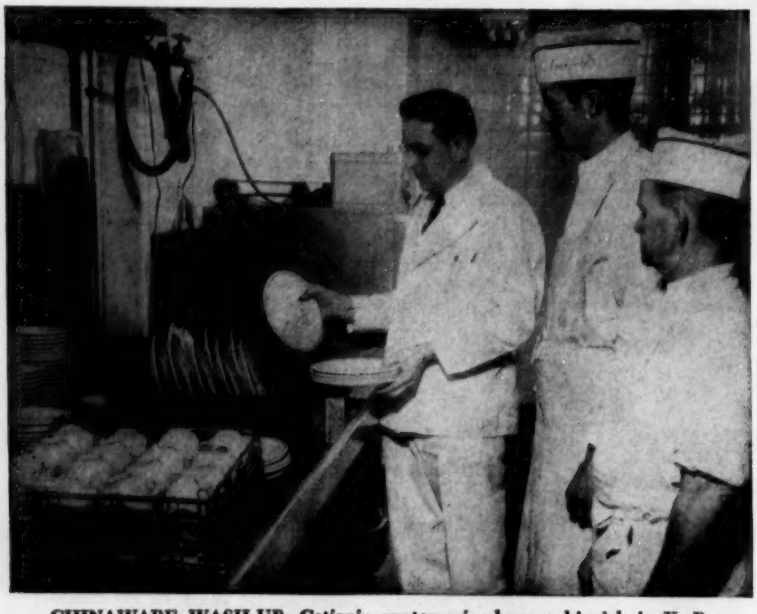


CHINAWARE WASH-UP: Cationic quaternaries have a big job in K. P.

For Offbeat Jobs, Cationics

Increased emphasis on their ability to quell static electricity points to new uses for cationic compounds.

Already valued as textile finishes and sanitizers, output of cationics has jumped fivefold in the past seven years, and it looks as if there's no slump ahead.

Early last month floor wax makers, plastics molders and a lot of other manufacturers began hearing of a possible new additive for their products. American Cyanamid was promoting it; tagged Cationic SP, it's a relative of some of American Cy's textile specialties, but it has some unusual properties: maybe it can help solve the problem of static electricity.

For, incorporated in waxes or polishes, it makes products that remain static-free after buffing. Or, even more unusual, incorporated in plastic molding powders, it yields articles that carry no static charge, and thus attract little dust.

These novel applications highlight some of the uncommon jobs cationic compounds do. Classified, somewhat arbitrarily as surface-active agents, cationics have never reached the big volumes, productionwise,* of the cosurfactants, the anionics and nonionics. Nonetheless, they have jumped steadily in output; production now is easily five times that of only seven years ago.

Their categorization as surface-active agents, besides stacking the cationics up against some industrial giants, puts the emphasis on a characteristic that isn't always the one most important in determining end uses. The two big jobs of cationics—as germicides and as textile softening agents—don't depend primarily on surface activity—although that is a property contributing to their value.

Cleanup Spot: As germicides, the cationics—more specifically, quaternary ammonium compounds—have acquired a solid reputation among specialties manufacturers. But they still have plenty of competition from coal tar-derived disinfectants, pine oil, chlorine-liberating compounds, and newer synthetic germicides.

A big success in industrial sanitization, the quats have not yet sewn up the household market that many of their suppliers hoped for. And their advantages—lack of odor and color, low toxicity, stability—have, paradoxically, hampered their consumer market acceptance. Seemingly, the housewife seldom enthuses about a sanitizer that doesn't give off a phenolic or chlorine odor.

Too, the water-white, mild-appearing quats don't look rugged enough to be "real" sanitizers. There's some thought that a powder form of a quat, touched up with perfumes and colorants, might appeal more to both housewives and janitors, and at least one of the big producers is working on just such a product.

Quaternary-sudser combinations, large-selling institutional cleaning products, have not yet caught on with the housewife, either. To give suds and complete surface activity, a nonionic detergent (anionic won't work) is blended with the cationic, to make the two-in-one product. Cost is apparently a deterring factor in home sales.

The bacteria-killing quaternaries also find use in cosmetics—shampoos, and creams, etc. They have also turned up in paper towels, and in disposable tissues like Personal Products Corp.'s "Yes" tissue. A big potential outlet: as rinses for fresh foods at processing plants.

Best known of the germicide quats is Winthrop-Stearns' trademarked Roccal. But others, including Alrose Chemical Co., Armour & Co., Fine Organics Co., Rhodes Chemical Corp., and Rohm & Haas swell the output of these germicides.*

Soft Job: Textile mills also require sizable amounts of cationic products. (They were first introduced some 20 years ago as softening agents, and since have taken on other chores—as antistatic agents, antisoil agents, dyeing assistants.)

It's the structure of the cationics, in large measure, that qualifies them for these jobs. The heavy, fatty portion of the molecule is generally affixed to an amino—positively charged—group. The water-solubilizing end is negative, generally chlorine or bromine. This molecule has an affinity for fibers, which are often negative in charge. Such a compound gives a fiber an oily, lubricated surface that makes it flex more easily, feel softer than it would if it were untreated.

The growing use of synthetic fibers has helped boost cationic requirements in textile mills. Most of these synthetics are hydrophobic fibers, and their use has multiplied the problems of static

*According to Tariff Commission Reports out last week, 1953 surface-active agent production was 922 million lbs., of which 752 million was of the anionic type, and 8 million, cationic. Because of a change in the classification system, however, the '53 figures can't be compared with figures from preceding years—'52's cationic production was put at 41 million lbs.

*Output of one of the major quaternary compounds shows that demand for them has mounted steadily. The 1953 production of lauryl dimethyl benzyl ammonium chloride was 1,383,000 lbs. In 1946 it was 212,000 lbs.

Corrosioneering News

Quick facts about the services and equipment Pfaudler offers to help you reduce corrosion and processing cost.

Published by The Pfaudler Co., Rochester, N. Y.

Pfaudler Acid-alkali-resistant Glass Now Standard on Glassed Steel Units for Severe Chemical Service

Both of these glassed steel discs were exposed to buffered caustic soda (pH 11.5) at 212°F. for 30 days. Acid-alkali-resistant glass (above) was unaffected.

Above, note how the high-quality glass which was formerly used in Pfaudler glassed steel vessels was severely etched.

On September 1, 1954, acid-alkali-resistant glass became standard for all Pfaudler glassed steel equipment for severe chemical service. This new glass was first introduced to the chemical industries in November, 1951, and has been available as "special" since then.

Almost universal corrosion resistance

Wide and varied field experience over the past three years fully verified the original expectations for this glass—it has acid resistance equal to or better than the previous standard glass and, in addition, it is *three times as resistant* to corrosion by alkaline solutions.

Specifically, this glass is resistant to corrosion by all acids (except hydrofluoric), even at elevated temperatures and pressures, and to alkaline solutions up to pH 12 and 212°F.

10% price reduction

As "special," acid-alkali-resistant glass carried a 10% premium charge over the former standard glass. Now as a standard, this premium is eliminated and it will be available at no increase in price.

Acid-alkali-resistant glass, like the former standard, is deep blue in color. To permit identification, there is a glass number on the name plate of every Pfaudler vessel. At present, the number "53" is being used to designate the new standard glass while the number "42" designates the former standard. A new numbering system for easier identification is now in process. Full details will be included in a later issue of "Corrosioneering News."

Field experience "proves in" acid-alkali-resistant glass

A 1,000-gallon oxidation kettle, lined with acid-alkali-resistant glass, was placed in use 3½ years ago, processing sodium hypochlorite bleach containing 12-15% free chlorine. It produced 3,694 batches before showing noticeable wear. This is more than three times as many batches as were possible with regular high-grade Pfaudler glass.

"WORKHORSE"

Heat Exchanger Solves Cleaning, Gasket Problems

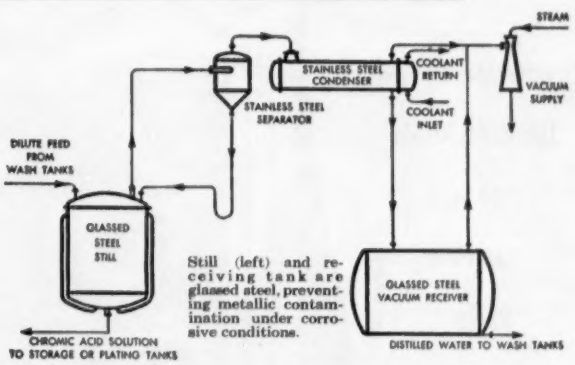
The nonremovable tube bundle of Pfaudler's Type FTS (fixed tube sheet) heat exchanger has won friends throughout the chemical processing industries. A money-saver, it simplifies cleaning and eliminates gasket problems.

The shell is permanently welded to the tube sheets, doing away with *all* gaskets or packed joints on shell side. There are *no* internal gaskets—no possibility of leakage or intermixture of hot and cold fluids.

Low First Cost

Original cost of Type FTS heat exchanger is low, because of its simple construction and standard design. Upkeep is low, because tubes are easy to clean, and you eliminate the problem of replacing gaskets or purchasing costly special gasket materials.

For complete data on this cost-cutting "workhorse," write for Bulletin 837.



Still (left) and receiving tank are glassed steel, preventing metallic contamination under corrosive conditions.

Packaged system recovers chromic acid

In plating operations, you can get substantial savings by the recovery of chromic acid from waste rinse water.

You do this easily with a Pfaudler chromic acid recovery system—a standard "packaged" system designed and fabricated by Pfaudler process engineers.

The system simply evaporates some of the waste wash water returning the balance to plating strength. This is then piped back to the plating tank. The distilled water obtained by the evaporation process is reused as pure wash water.

The Pfaudler system makes use of stainless steel for contact with pure water, while glassed steel protects equipment which must resist direct attack by the hot 24% to 45% chromic acid solution. Field experience and laboratory tests have both proven conclusively that acid-resistant glassed steel is the only practical material to withstand this attack.

Standard chromic acid recovery systems are available in capacities of 200, 300, 500 and 1,000 gallons. Often these systems pay for themselves within six months. One midwestern plant saved $42,000 a year by installing a Pfaudler system.

Write for Bulletin 914, which describes these systems in detail.

electricity. Happily, in many cases the cationic softeners have solved this problem—applied in small amounts (1-2% of fiber weight), they form a low-resistance path for the electrical charge to drain off.

Cationics have taken on roles as dyeing assistants, too. They seem to unite with the dye molecule, and boost its affinity for certain fibers. (On the other hand, some cationics appear to hasten the fading of some colors.)

Some of the textile jobs for cationics are repeated in the papermaking industry. Softeners are sometimes used on pulp that goes into paper napkins and towels. Also, cationic rewetting agents improve the "sopability" of paper towels, particularly those treated with wet-strength resins. And, like textile makers, paper manufacturers need antistatic agents. The cationics look like best bets in the line of products to give fairly permanent static-proofing, but none is ideal yet.

Little Change: Quaternary ammonium compounds were the first to find favor in textile applications, and although other types have since been developed, the quats still have broad use. Nearly every textile specialty house sells cationics: among the firms best known for them (and many of these also make cationics for germicidal products) are American Cyanamid, Ciba, Du Pont, Rohm & Haas, and Arnold, Hoffman.

For textile applications and cosmetic uses, the cationic products are generally light-colored pastes, rather than the thin, colorless liquids sold as disinfectants. Most of these textile aids are in the $1/lb. class on a 100%-active basis.

(In the case of the 8 million lbs. of cationics produced last year, as reported to the Tariff Commission, the estimated value was $6 million—an average of 75¢/lb. for all types of cats. Over the past five years, prices of the cationics have dipped only slightly. The giant volume anionics—752 million lbs. of them—sold for about 16¢/lb.)

In germicidal compounds, or in textile uses, the cationics have taken the offbeat jobs. But those jobs have been enough to balloon demand fivefold in the past seven years—not bad by any standards.

Rotor Blasting 'Suckers'

WINDMILLING along at head-height, a helicopter test-sprays a chemical that may be a labor- and money-saver for growers in Connecticut's Tobacco Valley. The chemical, maleic hydrazide, was developed by Naugatuck Chemical Co., and is used to stop the growth of "suckers," which sprout when the plant is topped. They sap the plant's vigor, and general practice is to break them off by hand. Naugatuck's product, MH-30, has already showed it will curb suckers on flue-cured tobacco in the South (*CW, Feb. 6, p. 56*). This helicopter-sprayed plot of broad-leaved tobacco will be harvested and processed separately, then checked for quality this winter.

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Off the Record

Jammed into the New York Academy of Sciences' building last fortnight were some 160 of the country's leading experts on cosmetics and dermatology. Their purpose: to inaugurate a series of seminars on the sciences related to their art.

Under the sponsorship of the Society of Cosmetic Chemists, scientists from industry and education put in two days hearing the latest findings in formulation, cosmetic testing, and the theory behind the actions of some cosmetic products.

The papers given at the seminar were solid, basic stuff. G. L. Brown (Rohm and Haas) and Sydney Ross (Rensselaer Polytechnic Institute) explained theoretical aspect of emulsions and foams. J. H. Dusenbury and E. D. Jeffries (Textile Research Institute) told of their work in finding just why animal hair tends to curl, and Ross Whitman (Rayette, Inc.) presented his theories on the action of thioglycolate hair waving preparations. Lloyd Hazelton (Hazelton Laboratories) and E. F. Traub pointed out the values and limitations of testing cosmetics on animals.

Outspoken: Valuable as the papers were in themselves, industry observers put as much value on the discussions the papers begat. The meetings were not hurried, and there was plenty of opportunity for discussions. Remarks were not recorded—no one had to put himself on the spot.

As a result, there was frank talk about cosmetic practices that seem designed to give the advertising departments something to rave about—and little more. And there were admissions that there are plenty of areas where research needs to be emphasized—points too often glossed over at formal meetings.

That the cosmetic industry, which is characterized by considerable trade secrecy, could participate so wholeheartedly (there were more registrants than could be comfortably handled) surprised some. But at the seminar, all talks were well attended—few left during the discussion periods, which seldom happens at scientific sessions.

The seminar was frankly patterned after the summer conferences (Gordon Conferences) of the American Assn. for the Advancement of Science. It is planned to make the seminar an annual affair.

So that valuable points of the discussions won't be lost, Dan Powers of the CCS hopes to have the papers rewritten to include the essential points brought up. After that, the society hopes to publish them.

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AMMONIUM CITRATE DIBASIC. A dry product for rust and scale removal with the same characteristics as the citric acid solutions partially neutralized with ammonia. It is of particular interest to manufacturers who market packaged home cleaners.

OXALIC ACID. Because Pfizer oxalic acid solubilizes iron oxide, it is the chief ingredient in radiator cleaning compounds. Combined with a wetting agent, oxalic acid solutions also find extensive use in washing railway cars and locomotives.

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OREGON STATE GAME COMMISSION

PISCICIDE BARGE: Improved fishing's the aim, rotenone's the method.

Improving by Killing

A blanket of death descended recently on Diamond Lake in Oregon to cut short the reign of "trash" fish that had infested what was once one of the great rainbow trout lakes of America. Later this fall the 3,000-acre lake will be stocked with 100,000 fingerling Kamloops (trout) and fishing may start again sometime next summer.

The killers employed were two forms of rotenone,* powdered Cubé and Liquid Noxfish, both being supplied by S. B. Penick (New York). Some 200,000 lbs. of the powder were used, and 275 gal. of the Noxfish. Total cost was around $150,000.

Noxfish was applied in feeder streams. The idea here was to prevent the "trash" fish from escaping into untreated water. As it turned out, the streams were rendered more toxic than the lake water.

Food Didn't Go 'Round: The goal of the project was to rid the once-famous lake of the millions of roach that were introduced by live-bait fishermen and first noted in 1940. The roach, a form of carp, multiplied so rapidly that gradually the supply of fishfood in the lake dwindled to the point where rainbow trout couldn't get enough to eat—they no longer grew to king-size and thousands couldn't even survive. All efforts of the game commission to control the roach with partial rotenone treatment failed, nor did fishing improve with heavier and heavier trout plantings.

*It kills by constricting the capillaries, which carry oxygen from the gills, causing suffocation. One drawback: it destroys all fish, good and bad. However, like Diamond Lake, bodies of water can be restocked with the desired types.

The operation got under way about 5:30 a.m., Sept. 21 and was finished the early part of the afternoon. Doing the job were over 100 employees of the Oregon state game commission, who were assisted by nearly as many sportsmen.

Attack Plan: To accomplish the task, the deep center portions of the lake were divided into four units with bright balloon markers. In each of these units operated a "rotenizer," so called by John Dimick, Oregon game commission biologist, who was field commander in the attack.

The "rotenizers" (*see cut*) consisted of four 14-ft. assault barges coupled together and decked to form a single scow. Between the barges was slung an 18-ft. pipe that acted as a mixing chamber and flume from which the powdered Cubé was shot into the lake depths. In the 29 shoreline sections marked off for outboard boats the product was spread from gunny sacks.

According to Penick, powdered Cubé was used at Diamond Lake because the job was so large—it's said to be the largest single body of water "poisoned" in this way in North America. Cubé sells for 27¢/lb., whereas Noxfish costs $5/gal. Though the latter is about twice as costly, it has its advantages.

Cheaper, But . . . One objection to powdered Cubé, for instance, is its irritating effects on the users. Also it calls for more labor. Shipped to Diamond Lake in paper bags, the Cubé had to be transferred to burlap sacks to make it possible to dispense it from small craft. In contrast, Noxfish can be

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sprayed from boats, even from planes. Other pluses: greater wettability, greater penetration, less decrease in effectiveness at temperatures less than 65 F.

Noxfish is made by extracting the 5% of rotenone in powdered Cubé (which comes from Peru) and adding an emulsifying agent, which disperses the product to give a cleaner and quicker kill. One gallon will treat 6 acre-feet of water (for a 0.5 ppm. concentration, 1⅓ lbs. of Cubé are used per acre-foot).

To date, Penick has sold Noxfish to 40 of the 48 state governments and also to fish and game clubs. It reports that a single state, Massachusetts, has already purchased 4,000 gal. this year.

While Penick admits that killing fish, even "trash" fish, is not a pretty business, it says no loud protests have been offered against the method. One problem it does present is that of disposing of the dead fish. Penick says that the wind is often enough to bring the fish bodies to shore. Otherwise nets are required. If not used for fertilizer, the fish are buried.

Another product currently employed to clean out unwanted fish is Fish-Tox, made by Vis-Ko (Sumner, Wash.). Though the company will not specify the rotenone content, it is assumed to be around 5%. Fish-Tox is sold as a soluble powder at 29¢/lb.

Fish and game commissions also benefit from the use of piscicides, have found that more waterfowl are attracted to lakes that have been so treated. Everyone seems to benefit but the fish that happen to be living in water that gets a substantial dose of rotenone.

Sulfur Turns the Trick

Dow Corning has just brought out a silicone polymer that can be vulcanized with sulfur. The product, 410 Gum, can be blended with, or applied as a protective coating on, organic rubbers.

It's simple to incorporate 410 Gum into rubber, Dow Corning says. It's compounded with natural rubber, fillers, and sulfur vulcanizers; it covulcanizes to yield rubbery products that are claimed to have greater weatherability, and to be serviceable over a wider temperature range than conventional rubbers.

It can also be blended with oil-resistant rubbers to increase their stability in contact with hot oil. The price is in the same range as standard silicone-rubber gums.

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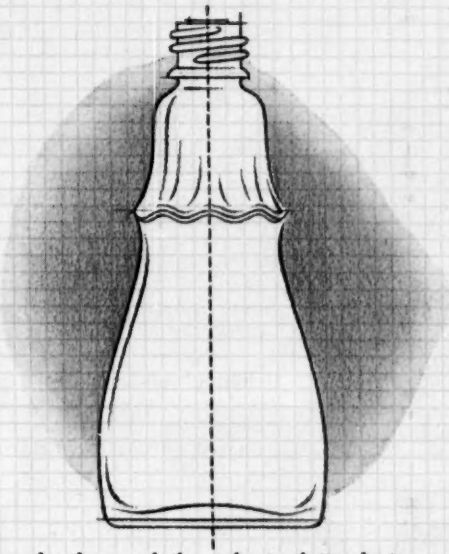
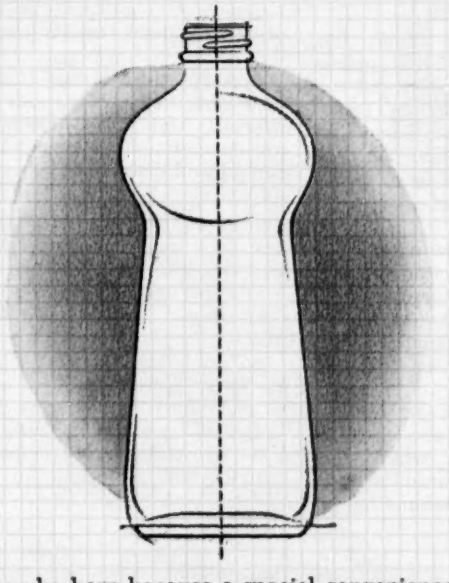
Mat Print Eliminator: Lunn Laminates, Inc. (Huntington Station, N.Y.)

How is a glass Salespackage born?



It may be born of the talent of its designer to picture the virtues of a product by the grace and beauty of its container.

It may be born from necessary emphasis on the protection of its contents from every outside influence.



It may be born because a special convenience to the user is needed to insure satisfactory performance under difficult circumstances.

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has developed a process that's said to eliminate telltale mat prints from reinforced plastics and press-molded finished products. Called Lunn Finish No. 107, the procedure is reported to do away with buffing, sanding and painting.

•

One-Day System: Sherwin-Williams has brought out a new one-day floor-finishing system based on a polymer sealer and an alkyd-base varnish. The only advance preparation calls for filling open grain surfaces and permitting them to dry. The sealer dries in 1½ to 2 hours, the varnish in 6 to 8—the latter has a workable wet edge for approximately 30 minutes. At normal room temperature floors treated with the combination are dry within a 10-hour period.

•

Thermosetting Series: Now offered by National Adhesives, division of National Starch Products, Inc., is a new series of thermosetting adhesives called Duro-Lok, claimed to have two to seven days stable working periods, and said to cure rapidly in hot or cold presses. Available in emulsion, paste, or solution form, the adhesives eliminate catalyst addition and proportioning, are claimed to adhere to most surfaces.

•

Finish for Polystyrene: Logo, Inc. (Chicago) now offers a finish applicable by spray to high-impact polystyrene prior to vacuum forming. Tradenamed Logoquant R-102, it may also be used on acrylic butryrate and rigid vinyl sheet. Its available in an unlimited number of pigmented colors.

•

Lacquer Plasticizer: Now offering diglycol oleate as a plasticizer for ethyl cellulose hair lacquer formulations is Glyco Products Co., Inc. (Brooklyn). The firm also offers working formulas incorporating the plasticizer.

•

For Perfumes: Givaudan-Delawanna, Inc. (New York) has a new chemical scent called Acetate P.A., which has a fruity-pineapple, warm, musklike character. It's suitable for perfume formulations and floral soaps.

•

Cosmetic Acid: Behenic acid (or docosanoic acid), a 22-carbon fatty acid, has been added to Aceto Chemical Co.'s (Flushing, N.Y.) list of cosmetic raw materials. It has a melting point of about 80 C.

•

Liner: Stalpic Div., A. Gusmer, Inc. (Woodbridge, N. J.) is now selling a new type of allyl-phenolic lining for storage and processing equipment. The material, Series 42A Stalpic lining, is said to be hard, yet flexible, and to have excellent alkali resistance. It is cured on steel at 340-370 F.

•

Degreaser: Said to remove light oil from metal parts more cheaply than vapor degreasers, Klearall 95 is a new solvent developed by Octagon Process, Inc. (Staten Island, N. Y.). It is used cold, can be recycled, and is said to be nonexplosive and will not support combustion.

•

Rx Size: Retailing at $3, a new prescription-size unit of Americaine (a benzocaine topical anesthetic) is now available in drug stores. The product is aerosol-packaged, sold by Arnar-Stone Laboratories (Evanston, Ill.).

•

Stabilizer: Advastab PS-38 is a new stabilizer, developed for use with fire-resistant vinyl compounds, to impart resistance to heat and light degradation.

•

Detroit Trio: Parke, Davis & Co. (Detroit) has added these three products to its pharmaceuticals:

- Abenyl—a preparation that offers dual antihistaminic action for relief of coughs due to colds or allergies.
- Amphedase with Phenobarbital Kapseals—to help depress the appetite of obese patients without stimulating the central nervous system.
- Abdol with Minerals—it combines in capsule form 10 vitamins and 11 minerals, and is recommended for treatment of multiple-vitamin and certain mineral deficiencies.

•

Bulletins: The most recent include:

- Paint Industry Survey, Sept. '54—an index to the paint industry in 14 Southern states. Published by Conway Publications (Atlanta) it retails for $1.50.
- "Adhesives for Film, Foil, Fabric and Other Web Laminations"—a 12-p. manual offered by Rubber & Asbestos Corp. (Bloomfield, N.J.). Included is a check list of end use properties of completed laminations.

•

Herbicide: A herbicide comprised of a water-soluble salt of methylene-bis-(iminosulfonic) acid in a concentration of about 0.5 to 15 weight percent has been patented (U.S. Pat. 2,689,-174) by Jonas Kamblet of Easton, Conn., and assigned to Mathieson Chemical Corp.

•

Wallpaper Paste: A wallpaper paste-base, consisting essentially of methyl cellulose and sodium chloride in proportions of 10 to 11 parts of methyl cellulose to 7 to 8 parts of sodium

V-C® Experience Means Better Bags for You

Experienced inspectors watch every phase of V-C's bag-making operation. Shown above is inspection of pasted bags. Photo at right shows battery of sewing machines, and inspection of completed sewn bags on conveyor belt.

Experienced operators carefully apply sleeves in the manufacture of sewn-valve bags. Great care is necessary in this operation. An improperly inserted or aligned sleeve can cause sifting after the bag is filled.

DEPEND ON V-C's more than 50 years of bag-making experience to help solve your packaging problems. Long experience, manufacturing skill and top-grade materials, add up to better-built V-C Multiwall Bags that provide maximum protection for your product. V-C Multiwall Bags are designed to your needs, made two- to six-ply, and printed in one to four colors. Write for full information, or discuss your requirements with a V-C representative.

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chloride, has been patented (U.S. Pat. 2,689,184) by Frank X. Grossi of St. Louis County, Mo., who has assigned it to The Reardon Co. (St. Louis, Mo.)

•

Insecticide Combination: Lindane is part of a one-two punch in a new insecticide product devised by James Hansen, of California Spray-Chemical Corp. (Richmond, Calif.). The lindane is apparently synergized with a trialkyl phosphate insecticide—about one part of the phosphate to ten parts lindane, (U.S. Pat. 2,689,201).

•

Adding Additives: Gain Corp. has been formed in Chicago to market five new chemical specialties for automobiles. The additives are Engine Care, for crank case treatment; Car-Care, for cleaning carburetors; Valve-Care, for freeing valves; Gear-Care, a friction-reducing compound; and Gain's Engine Cleaner, a specialty solvent for engines. Gain Corp. is a subsidiary of Frederick A. Stresen-Reuter, Inc., a Chicago firm best known as manufacturers of paints, printing ink, and petroleum products.

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Canadian Gathering: The Canadian Agricultural Chemicals Assn. will hold its second annual meeting and conference Oct. 28-29 at the Seigniory Club in Montebello, Quebec.

•

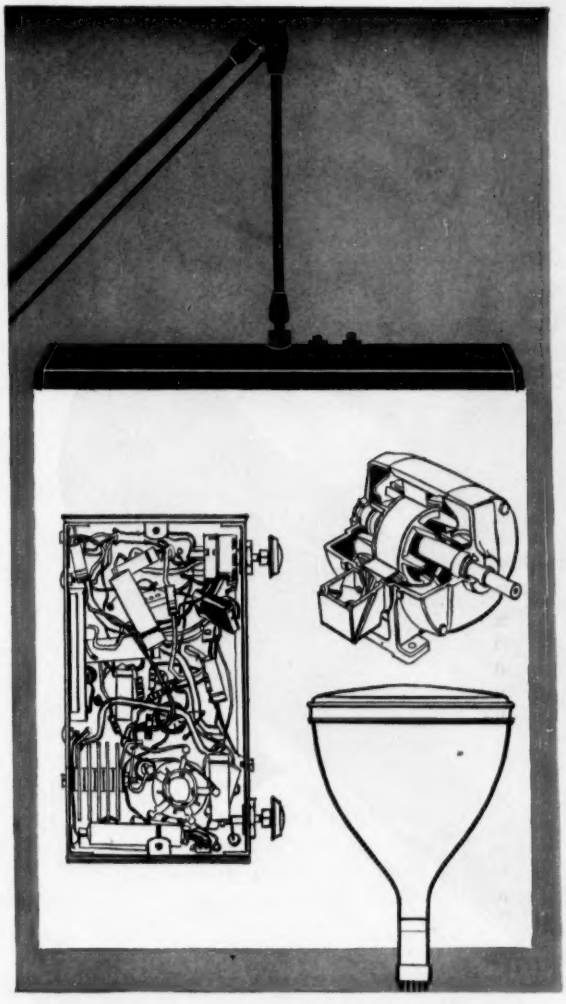
Almost Colorless: Allied's Barrett Division has developed a "low color" technique of making plasticizers that is said to be helpful in manufacturing transparent vinyl sheeting and tubing. As a result, maximum color specifications on two types have been reduced by one-half. The pair: Elastex 28-P (DOP) and Elastex 80-P (dicapryl phthalate). In addition, Barrett has a new plasticizer, Elastex 40-P, designed for extruded items, plastisols and organosols. It sells for 27¢/lb. in bulk quantities.

•

Competitor Purchase: Thompson-Hayward Chemical Co. (Kansas City, Mo.) has just purchased seven plants of one of its leading competitors in the laundry and dry-cleaning supply field, Carman Co. Inc. The plants are located in various states.

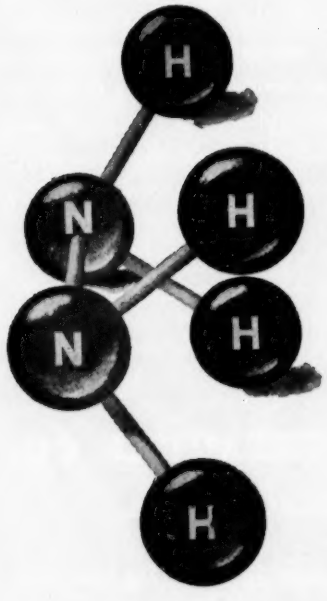
•

Really Hard: Winthrop-Stearns Inc. has invented a coating that makes pills so hard they can't be chewed, have to be swallowed whole. The coating (made especially hard with a silicate) is intended to protect the mouth from discoloring dyes used for diagnosis and from unpleasant-tasting medicines.



from Hydrazine... new light on old soldering problems

For greater efficiency and economy in the production of electrical and electronic components, a remarkable new series of soldering fluxes, called CORONIL, permits more effective work and fewer rejects. Developed by the McCord Corporation, these new fluxes are based on compounds of hydrazine; they are non-corrosive and can be used without hazard. They remove oxides and other films from most of the commercially used metals such as copper and brass —as well as others—and are particularly applicable to electrical work where non-corrosive soldering is essential. In addition to this field, these CORONIL fluxes are used in the manufacture of automotive radiators and other heat exchangers, oil strainers, and carburetor floats.



from Hydrazine... new fields for chemical research

Through greatly diversified research, more and more new applications of hydrazine are being discovered. In addition to its use in fluxes, hydrazine is an important component of plant growth regulators, and an effective scavenger of oxygen in boiler feed water. As a chemical capable of reacting with a wide variety of both organic and inorganic materials, hydrazine is the starting point for countless hydronitrogen compounds. Perhaps you could use the latest information on hydrazine and its many derivatives and how they might apply to your field of interest . . . if so, why not write today?

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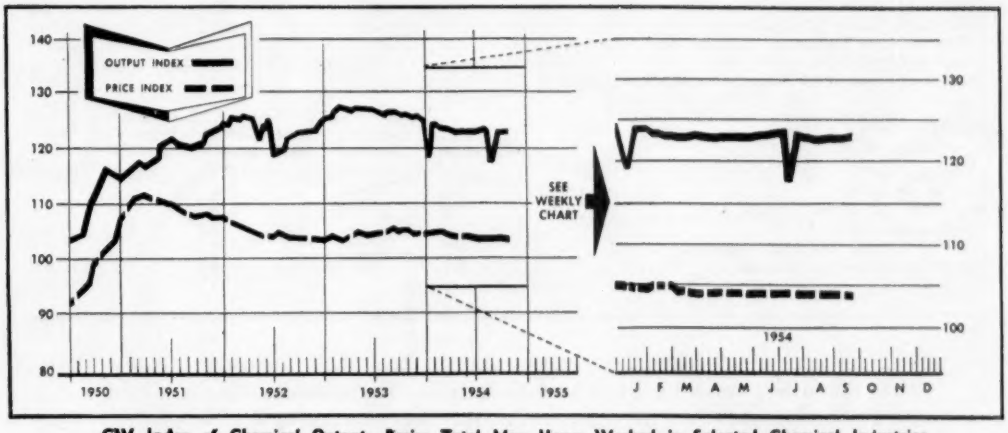


CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

More and more marketers this week are heartened by the brisker pace of chemical movement—of both agricultural and industrial items—which supports early-summer predictions of a fall pickup.

Demand for fertilizer materials, for example, has perked somewhat, and will likely improve further during the next several weeks. Reason: makers of complete fertilizers are stepping up their purchases, now mixing up batches that will be headed for autumn and spring farm applications.

•

This month will also probably mark announcement of some fertilizer price-tag altering. That is, if at least one coke-oven ammonium sulfate maker's plans of a few months ago pan out. At that time *(CW Market Letter, May 29)*, U.S. Steel posted a five-month (June 1-Oct. 30) price schedule for its material that was calculated to give early-season customers a $2-$3/ton price break.

At the moment, company officials could well be deciding whether business is good enough to warrant a hike, or steady enough to continue the current $42/ton (bulk, f.o.b.) price. It's a safe bet, though, that talk of any reduction is being side-stepped.

•

That latter statement could apply to ethyl alcohol. For the last few weeks, sales to chemical solvent outlets as well as to pharmaceuticals have been bouncing along at a pretty good clip. Cosmetic people, of course, are getting ready for the upcoming Yule season trade, have increased their take enough to cheer not-too-long-ago glum alcohol sellers.

Recent trade talk that industrial alcohol prices would be nudged upward in the fourth quarter was discounted because there was some doubt whether business would be maintained at good levels. Whether or not consumers will be paying more than the current 40¢/gal. come the first of the new year is still a matter for conjecture, though certainly not a too-far-off possibility.

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	123.5	123.4	126.4
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.2	104.2	104.8
Bituminous Coal Production (daily average, 1,000 tons)	1,345.0	1,322.0	1,605.0
Steel Ingot Production (1,000 tons)	1,678.0 (est.)	1,678.0 (act.)	2,146.0
Stock Price Index at 13 Chemical Companies (Standard & Poor's Corp.)	336.5	334.1	246.0

MONTHLY INDICATORS—Foreign Trade (Million Dollars)	Exports Latest Month	Exports Preceding Month	Exports Year Ago	Imports Latest Month	Imports Preceding Month	Imports Year Ago
Chemicals, total	$87.3	$90.4	$65.7	$15.8	$20.6	$22.1
Coal tar products	7.1	7.2	4.7	3.2	2.6	4.3
Medicinals and pharmaceuticals	20.5	22.1	17.4	0.5	0.7	0.5
Industrial chemicals	12.9	14.0	9.7	5.1	5.2	6.4
Fertilizer and fertilizer materials	4.8	4.4	3.3	5.1	10.0	8.2
Vegetable oils and fats, inedible	8.1	8.6	7.3	6.5	7.0	8.8

Prices of Phenolic resins used in the shell molding industry were hiked last week by Reichhold Chemicals. The advance equals a similar 2¢/lb. increase by the company about two months ago (*CW Market Letter, July 31*) and for the same declared reason—"selling prices are in unsatisfactory relationship to costs."

The earlier increase (which raised official schedules to 26¢) was not universally emulated by producers, though some did revise prices upward a penny a pound. Today, despite other sellers' inclinations to follow Reichhold's suit, some observers express doubt the new 28¢/lb. schedule will set an industry standard.

•

There's some rapid-fire price matching, however, in the refrigerant and propellant field. A week or so ago, General Chemical reduced its brand of monochlorodifluoromethane (Genetron 141) by 2¢/lb. Late last week Du Pont slashed its comparable product (Freon 22) by 5.1¢, establishing a manufacturer's schedule of 58.5¢/lb. (f.o.b., works).

This week General nicks the protruding 3.1¢ off the Genetron price, setting a like f.o.b. figure. The changes, though, aren't primarily competition-sparked, are more the result of a long-time shortage easing. Reason: expansion of supply facilities.

Du Pont, for instance, currently has under construction a new Freon 22 unit at Louisville, Ky., in addition to the one that went into operation earlier this year at Deepwater, N. J. A brand-new General plant at Baton Rouge, La., began turning out commercial quantities of the fast-stepping industrial refrigerant just a few weeks ago.

•

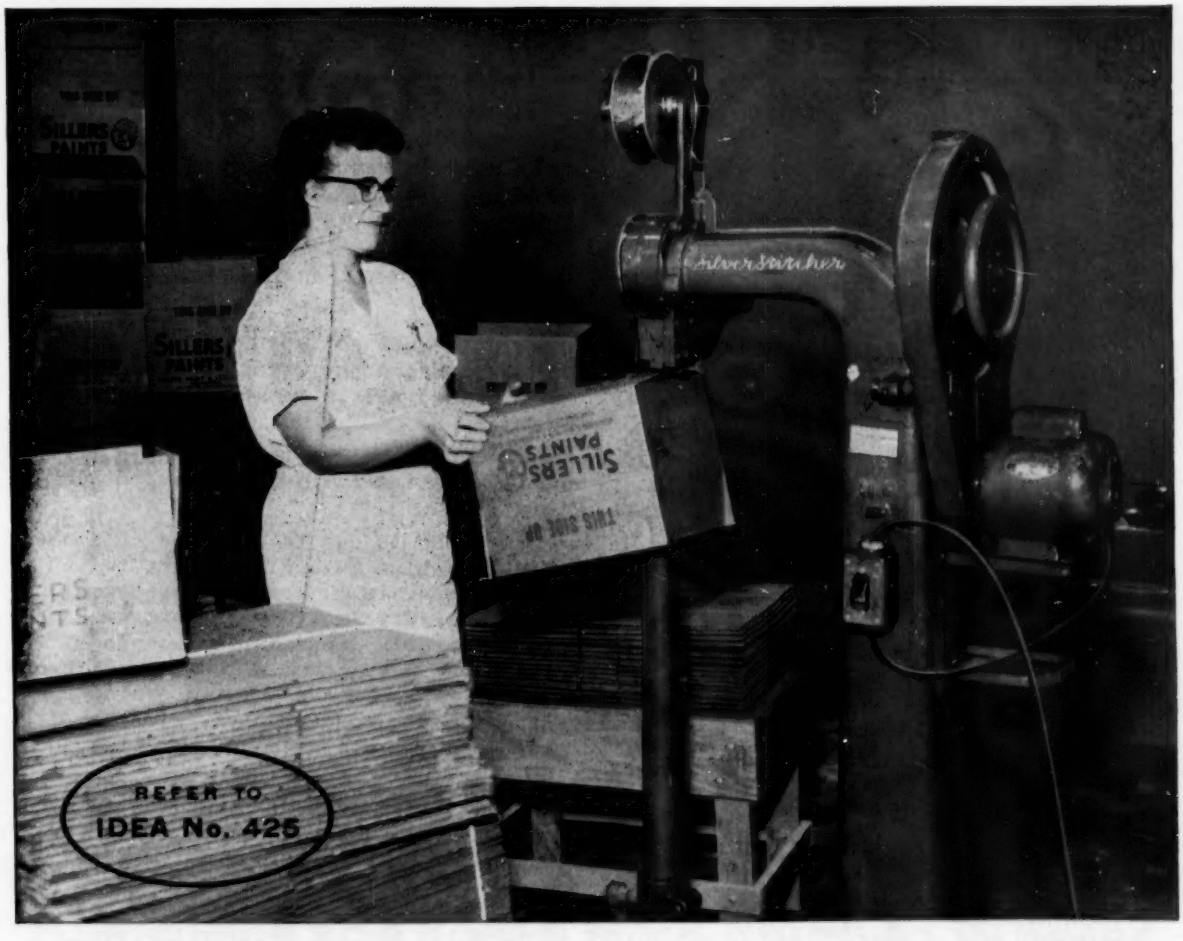
U. S. ammonia production capability continues to swell. For example, Mississippi Chemical (Yazoo, Miss.), which has already completed one project that ups its capacity to 195 tons/day, will, before the end of the year, add improvements and additional equipment to hit an output rate of 290 tons/day.

All of the increased production will head for fertilizer outlets—part to be distributed as anhydrous ammonia, the balance to be converted into ammonium nitrate.

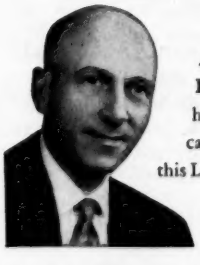
SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending October 4, 1954

	Change	New Price		Change	New Price
DOWN					
Mercury, metal (76-lb flask) net flask	$ 10.00	$330.00	Monochlorodifluoromethane, ton cyl., works, f.o.b.	.051	.585
UP					
Lauric acid, 90%, dms.	$ .01	$ .3525	Phenolic resins, (shell-moulding), c.l., truckloads	.02	.26

All prices per pound unless quantity is stated.



AIM* for EFFICIENT CARTON ASSEMBLY with Acme Steel Wire Stitching Ideas



Acme Idea Man, Fred C. Hartman, helped modernize carton assembly at this Los Angeles plant.

ask your *Acme Idea Man to help solve your problems

When you assemble cartons as they are needed, valuable storage space can become income-producing space. The Sillers Paint & Varnish Company for example, utilized Acme Steel Idea No. 425 to achieve greater efficiency throughout the packaging operation in its new Los Angeles plant. Previously, when the cartons were glued, extensive drying time and storage space were required. Now, cartons are stored flat and an Acme Steel Silverstitcher, using coiled Stitching Wire, assembles cartons as rapidly as required. In addition to time and space savings, shipments stay safely packed and arrive damage-free.

To make sure you are getting the most from your "packaging" dollar, ask your Acme Idea Man to analyze your packaging problems. Or, write Acme Steel Products Division, Dept.TV-104, Acme Steel Company, 2840 Archer Avenue, Chicago 8, Illinois.

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● South Charleston, W. Va.		" "
● Institute, W. Va.		" "
● Niagara Falls, N. Y.		Acetylene
Celanese Corp.	200	
● Bishop, Texas		Propane and butane
● Pampa, Texas		" " "
Tennessee Eastman Co.	150	
● Kingsport, Tenn.		Synthetic ethanol
Publicker Industries, Inc.	60	
● Philadelphia, Pa.		Fermentation ethanol
Hercules Powder Co.	40	
● Parlin, N. J.		Synthetic ethanol
Cities Service Oil Co. of Delaware	10	
● Tallant, Oklahoma		Propane and butane

Acetaldehyde Poser: How Much to Where?

Today acetaldehyde makers—like most other chemical sellers—are taking a sharp fourth-quarter look at consumption trends. The former, of course, are concerned with their particular 700-million-lbs./year output dispersion:

Acetaldehyde End Use Pattern 1954 (est.)
(million lbs.)

Acetic acid (synthetic)	330
n-Butyl alcohol	200
Acetic anhydride*	85
2-Ethyl hexanol and other aldol products	50
Pentaerythritol	25
Pyridines, chloral, and miscellaneous	10

Two top consumers—acetic acid and n-butyl alcohol—are actually bellwethers of acetaldehyde consumption. Thus, the current briskness in synthetic acetic acid shipments may well presage better days for the still-depressed textile industry. Expectations, too, are for a record output this year of the No. 2 acetaldehyde taker, n-butyl alcohol.

These prospects, coupled with rising consumption of pentaerythritol and substituted pyridines, are a healthy send-off for a pair of soon-onstream acetaldehyde producers. These newcomers in the production fold will be Stanolind Oil & Gas Co.'s re-engineered Carthage Hydrocol plant at Brownsville, Tex., and the Warren Petroleum Corp. plant abuilding at the Warren Gas Terminal on the Houston Ship Channel, Tex.

Both plants will oxidize propane and butane of natural gas to a spate of organics, of which acetaldehyde will be one major component. Trade "guesstimates" peg Stanolind's initial acetaldehyde output at some 7 million lbs./year, and Warren Petroleum's at 2 million lbs./year.

But captive consumption is an old tune for most acetaldehyde producers. At the current 700-million-lbs./year rate of production, acetaldehyde makers expect sales of only 30-40 million lbs. And the quantity has hovered near that during recent years: 27.2 million lbs. in '52, 28.6 million lbs. the year before.

It's pikestaff-plain, then, that virtually all of the acetaldehyde output is an intermediate for other products. It's a pretty well known fact that about half —some 330 million lbs.—of the entire acetaldehyde output is oxidized to acetic acid. But it's well-nigh impossible to spell out the fraction of acetaldehyde going to acetic anhydride via acetic acid. Reason is involved in the intricacies* of accounting for use of all recovered acetic acid.

Then, too, it's a matter of bookkeeping whether production of vinyl acetate is counted as an acetaldehyde consumer via acetic acid. At any rate, a plant capable of producing acetic acid from acetylene can, with certain engineering changes, spew forth acetaldehyde (e.g., Carbide's Niagara Falls, N.Y., plant). But in an end use compilation (*see table, left*) the consumption of acetaldehyde is counted

*Derived from ethyl alcohol. Acetaldehyde required for acetic acid going into acetic anhydride is included in the 330-million-lb. figure.

*Another poser involved in determining whether the production of vinyl acetate consumes acetaldehyde via acetic acid: the question whether or not producing firms uniformly report such intermediate products to the U. S. Tariff Commission.

through the acetic acid figure. A new process on the horizon of using acetaldehyde and acetic anhydride will, of course, place vinyl acetate in the end use table.

Whatever the input-output complications, though, acetaldehyde producers face up to these sobering facts: business has been poor for their acetaldehyde-spawned acetic acid and acetic anhydride. (By the end of this year makers of synthetic acetic acid may not hit 400 million lbs., and that's quite a topple from last year's total of 477.7 million lbs.† of new acid [100% basis]). Fact is, this year may barely outpace '52's 382.9 million lbs., and will sag well below the 454.0 million lbs. in 1951 and the 441.2 million lbs. in 1950.

Just as for acetic acid, the scoreboard for acetic anhydride production this year will evoke few cheers. By year's end, total U.S. plant output from all sources may barely reach 610 million lbs., a sharp plunge from just about any recent year's total:

Production of Acetic Anhydride
(100% basis, from all sources)

	(million lbs.)
1954 (est.)	610.0
1953	803.5
1952	686.3
1951	975.9
1950	907.7

The slump in acetic anhydride production—whether from the oxidation of acetaldehyde from ethylene-derived ethanol (Carbide and Carbon and Hercules) or from ketene and acetaldehyde-derived acetic acid (Celanese Corp. and Tennessee Eastman)—mirrors, of course, the dark days for cellulose acetate and much of the textile industry this year.

The arm-in-arm movement of cellulose acetate and acetic anhydride production figures underlines the fact that about 85% of all acetic anhydride goes into figuratively shrinking acetate vats. Here's the picture of the acetate downtrend in the past 5 years:

Production of Cellulose Acetate
(million lbs.)

1954 (est.)	340.0
1953	435.4
1952	390.0
1951	551.6
1950	524.7

Butyl Upcomer: Second only to acetic acid as an acetaldehyde-consuming maw is the blossoming production of n-butyl alcohol. Except for some 30 million lbs. of n-butyl alcohol stemming from the bacterial fermentation pots of molasses and grain, all this year's estimated 175 million lbs. of total output will come from the aldol condensation of acetaldehyde. That, of course, is via the dehydration to crotonaldehyde, which in turn is hydrogenated to n-butyl alcohol. This much butanol will siphon out about 200 million lbs. of acetaldehyde.

Based on the showing of the first six months of this year, the 175-million-lbs. total will be a resurgence over last year's 155.3 million lbs. and well above 1952's 117.2 million lbs. This butyl stream is headed into nitrocellulose lacquers either as a solvent directly or, to greater extent, as n-butyl acetate. The latter is by far the major lacquer solvent in the medium-boiling class.

Over the long term, however, n-butyl alcohol has languished in take, percentagewise, when compared with the growth of the nonacetaldehyde-consuming isobutyl, sec-butyl, and tert-butyl alcohols. In particular, the rise of isobutyl alcohol has been sparked by the popularity of methyl ethyl ketone (*CW, June 5, p. 90*), for which it is the raw material.

At the same time the butyl acetates, of which normal butyl acetate comprises about 90%, have been pretty much at a production standstill. The chances of n-butyl alcohol or its esters* giving a really sizable boost to acetaldehyde production are slim. There's no denying that this alcohol and n-butyl acetate are meeting increased competition with other solvents, although all are in less demand this year by the none-too-lively nitrocellulose lacquer industry.

A Phthalate Dive: Falling way below acetaldehyde-consuming rates set by all the above-mentioned items, 2-ethyl hexanol nonetheless pre-empts about 50 million lbs./year of the basic ingredient. As one of the octyl phthalate plasticizers, di (2-ethyl hexyl) phthalate drinks up a good 90% of this alcohol. But last year, production took a nose dive to 51.3 million lbs., from the 61-65 million lbs. turned out in the previous three years. Reason for the slump: keen competition from the other octyl phthalate plasticizers (di-n-octyl decyl phthalate and diiso-octyl phthalate) that find favor among vinyl resin users.

Close on the heels of 2-ethyl hexanol as an acetaldehyde user, fast-stepping pentaerythritol (PE) has come into the big-time, largely as an alkyd resin polyol and in the upgrading of drying oils. Indicative of the rapid use: this year's near-60-million-lb. output prediction. Pentaerythritol production

†Production of natural acetic acid amounted to about 20.4 million lbs. in 1953.

*Last year's output of all butyl acetates (90% basis) came to 61.5 million lbs., albeit better than '52's showing of 53.8 million lbs., but not impressive when compared with 1950's total of 76.5 million lbs. and 1951's 67.8 million lbs.

(56.3 million lbs. in '53) ballooned upward from 1950's output of 36.4 million lbs., today is a hefty outlet for nearly 25 million lbs. of acetaldehyde that will be condensed with formaldehyde.

Present capacity for pentaerythritol lies in the range of 70-80 million lbs./year, but the chances are the rate of rise in actual output will not now be so rapid.

PE's unique properties has carved for it a stable niche in at least one-third of the alkyd resin market. On the other hand, glycerol continues to be preferred in a long list of phthalic alkyd combinations to the exclusion of pentaerythritol.

In the sizable segment of the market where the inherent properties of the two products work similarly, lower selling price is still the thumb on the scale of preference.

Chemical Hook: However, it was a Korea War-induced shortage, rather than price, of coal-tar pyridine that moved acetaldehyde and ammonia into the synthesis of substituted pyridines (*CW, Jan. 31, '53, p. 30*).

In this usage acetaldehyde has nudged into another man-made textile fiber besides cellulose acetate—Chemstrand's Acrilan. This fiber, touted as a 30-million-lb./year synthetic is a copolymer of acrylonitrile and alpha methylpyridine. About 5-10% of the latter is added as a kind of chemical "hook" for dyes, and indeed it's agreed among the trade that Acrilan has at least as good dyeing properties as any other synthetic. Some of the other substituted pyridines are also being used in synthetic fibers, particularly 2-methyl-5-ethyl pyridine.

Somewhat more acetaldehyde is consumed via the substituted pyridine route in the synthesis of the vitamin niacin (nicotinic acid). Niacin makers turned to 2-methyl-5-ethyl pyridine as a raw material when the Korean War siphoned off supplies of coal-tar quinoline. Last year's combined output of nicotinic acid, niacinamide, and niacinimide hydrochloride was close to 1.9 million lbs.

Among the small consumers of acetaldehyde, together with the makers of substituted pyridines, are found chloral (trichloroacetaldehyde) manufacturers. Annual chloral output, staying close to 20 million lbs., and going to the production of DDT, currently takes about 4 million lbs./year of acetaldehyde. Now, perhaps some three-fourths of the chloral is synthesized from acetaldehyde rather than from the older ethanol.

But it's the heavy consumers of acetaldehyde—acetic acid, acetic anhydride, n-butyl alcohol—which may well open up more acetaldehyde pipelines and close up the present gap between an estimated U.S. capacity of 860 million lbs. and a current consumption of 700 million lbs./year. That, at least, is one hope of hard-pushing acetaldehyde makers.

Eyes on Penicillin

Under consideration by government mobilizers right now is a new plan to stockpile penicillin for possible emergency use. The discussions are significant not only from the point of view of penicillin makers—the pile may come to somewhere near a year's normal production—but also to producers of other disaster-useful chemicals and pharmaceuticals that have a limited effective life.

Key to the plan is a rather new type of "stockpiling"; it will probably take the form of inventory expansion financed or guaranteed by the government, rather than the conventional, physical stockpile in government warehouses. Fact is, some officials substitute the phrase "bulge in the pipeline" instead of "inventory expansion."

As yet the program is still in the talking stage, but already it has been discussed by top-drawer officials in the Office of Defense Mobilization, Federal Civil Defense Administration, Public Health Service, Defense Dept. and Business & Defense Services Administration. Concrete proposals reportedly won't be made, however, until BDSA completes a current survey of total requirements and sources of supply in the U.S. That phase should be completed about early November.

The industry, too, will make recommendations at an industry advisory committee meeting likely to be held in the latter part of November or early December. After that, the wheels will begin to roll.

One big reason for the concern mobilizers are showing over penicillin is the fact that some 60% of the U.S. capacity for this antibiotic is located in critical target areas. If the U.S. were attacked, chances are there would result not only a loss of these plants, but also a greatly increased need for antibiotics.

The specter of outdates* rules out the traditional method of stockpiling, but there has been no dearth of possible substitute plans. Washington has scouted these three:

- Construction of standby plants in dispersed areas.
- Stockpiling of critical plant equipment (e.g., stainless steel fermentation tanks).

*Penicillin can only be stored a limited time, usually 1-3 years, depending on the type.

• The inventory expansion idea.

The latter, of course, has garnered most of the nods. Officials envision the program as following this pattern: If a producer normally keeps a working inventory of say 5 million Oxford units at a distribution point (not in a so-called target area), the government would buy an additional stock, which the maker would store along with his own inventory. At periodic intervals the producer would put fresh material into the government stock, work the other through his normal channels. (The plan is similar, in some respects, to that already in operation for a few imported drugs that could be needed here in an emergency. Opium, for one, is being purchased and placed in stockpiles—with proper attention given to rotation. Other import products (e.g., quinidine), may possibly get the same treatment).

Packaging plants in similar areas would also take part, increasing their bulk penicillin inventories with government aid. One of the thorny administrative problems, however, involves striking a balance between different stocks of bulk antibiotics.

Another poser: whether or not the small, emergency stockpiles now held by civil defense and the armed services should be integrated into the new program.

Penicillin Flashback: Penicillin isn't, of course a new brow-wrinkler. A couple of years ago when the then-active Defense Production Administration set a penicillin expansion goal of 600 trillion units by 1955 (*CW, July 26, '52*), some producers raised an incredulous howl. Capacity already had ballooned more than fivefold over the previous two or three years, primarily to meet the rising swell of demand. (A shortage had developed that lasted well into 1951.)

Producers, sparked by expected government orders for military procurement, civilian defense and purchases under the now-defunct Economic Cooperation Administration, continued to push penicillin output. This effort, plus improvements in technology, boomed yields, was enough to start penicillin well on the way to a glut condition when the goal was announced.

And Today: All of the capacity certified then to hit the expansion target is not yet in; even so, there is more already than is needed to meet current demand. Trade talk has it that more than one maker has backed out of production.

How the market has skittered is pointed up by some Tariff Commission figures (*see table below*).

Difference between production and sales doesn't necessarily mean that supply outdistances demand—there is some loss attendant to bulk penicillin production—but the most recent data does underscore the fact that current output is geared to market requirements.

At the moment, perhaps 75-80% of the available penicillin is dispensed to humans through doctors, hospitals, etc.; about 10% goes to veterinary use; and the balance ends up in animal feed supplements and other uses.

There's no way of knowing exactly how much penicillin the government's new "pipeline bulging" program will eventually take, but some observers don't believe the prospects are strong enough to set now-idle equipment back in production. Not calculated to heighten interest, either, is this: current nonproducers don't have, on immediate tap, the outlets necessary to rotate the government-tagged material.

But much depends on the outcome of the new program. Success might easily determine whether or not other perishable domestic pharmaceuticals could be handled in a like manner.

Penicillin Salts; Output, Sales

	PRODUCTION	SALES	VALUE	VALUE/ BILLION UNITS
	(billion international units)			
1951	318,622	250,407	$137,517	$549.00
1952	342,326	286,861	82,656	288.00
1953	371,589	354,024	57,752	163.13

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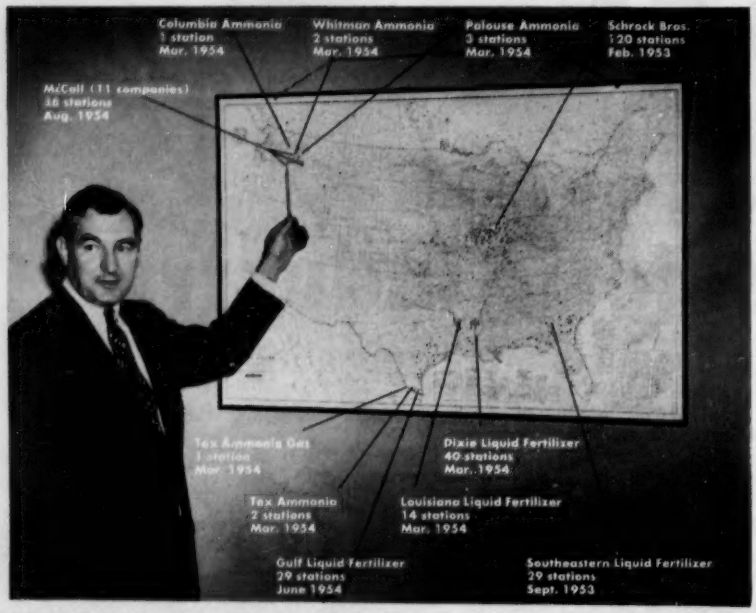


PINPOINTING THE SPOT: Controller Hal Hynes locates latest addition to Chemical Enterprises' . . .

Ammonia Station Network

Scarcely a week passes without news of added ammonia production either going onstream or being planned. And with nearly another million tons capacity (CW Report, Aug. 28) due to come in by the end of the year, ammonia news will continue to be very much in the air.

But while fresh capacity has been making the trade headlines, virtually nothing really new seems to be developing toward solving the persistent problem of how to distribute agricultural ammonia to the ultimate consumer, the farmer. With one exception. Headquartered in New York City, a sprouting organization, which calls itself Chemical Enterprises, Inc., has been zeroing in on this distribution target.

Latest of Chemical Enterprises' news-making activities is its recent purchase of the McCall interests, specifically nine ammonia distributing companies serving the great Northwest wheat belt farmers.

Planned Pattern: Chemical Enterprises, by its own description, "is primarily engaged in the distribution and application of commercial fertilizers with particular emphasis on anhydrous ammonia."

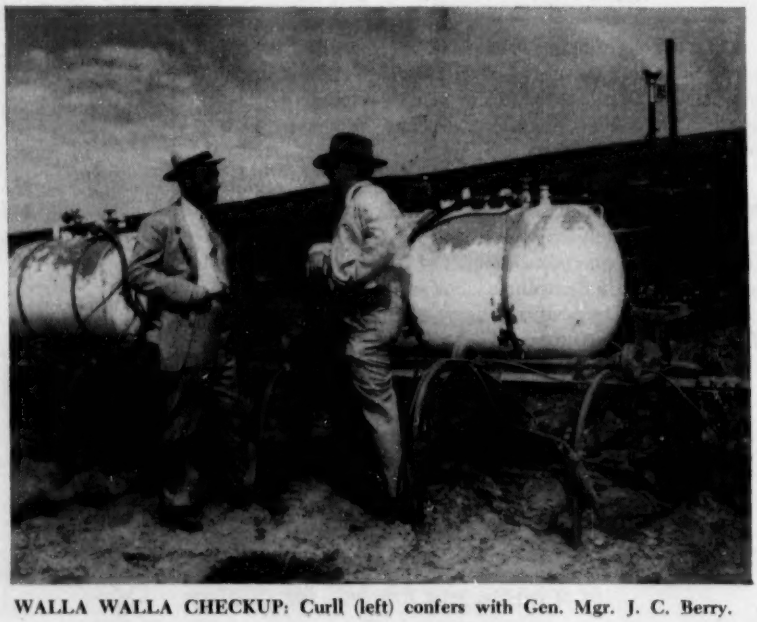
The company's active entry into the agricultural ammonia business dates from February last year, when it acquired a substantial interest in seven-year-old Illinois distributor, Schrock Bros. In Schrock, Chemical Enterprises obtained a "going" ammonia operator versed in the ways of the farmer and having, among other assets, storage for nearly a million gallons of anhydrous ammonia plus 120 local agricultural product outlets, or "stations," in the heart of the Midwest corn belt.

Then, following a planned pattern of placing its distributing eggs in several baskets, Chemical Enterprises branched out rapidly. Today, according to President Dan Curll, it controls 277 ammonia stations of 38 affiliates literally across the country (*see map, left*).

Through its subsidiaries and affiliates (in addition to Schrock) it now serves ammonia too:

- Corn, cotton and tung nut raisers in Georgia and Florida. Also in the same area, it serves an expanding beef cattle industry through feeding nitrogen-hungry special grasses, lately developed for year-round pasturing.
- Cotton planters, and to a lesser extent corn, sugar cane and rice growers, in Louisiana.
- Vegetable and citrus croppers in the lush south Texas Rio Grande Valley.
- Wheat and small grain growers in the sprouting Washington-Oregon-Idaho tri-state region.

Despite its seemingly diverse interests, Chemical Enterprises, unlike Topsy, has not "just growed." In fact its widespread operations have been located with the express thought of easing one of the biggest of the ammonia producer-distributor headaches, the seasonability of demand in any given area. For example: the latest major move, the McCall purchase in



WALLA WALLA CHECKUP: Curll (left) confers with Gen. Mgr. J. C. Berry.

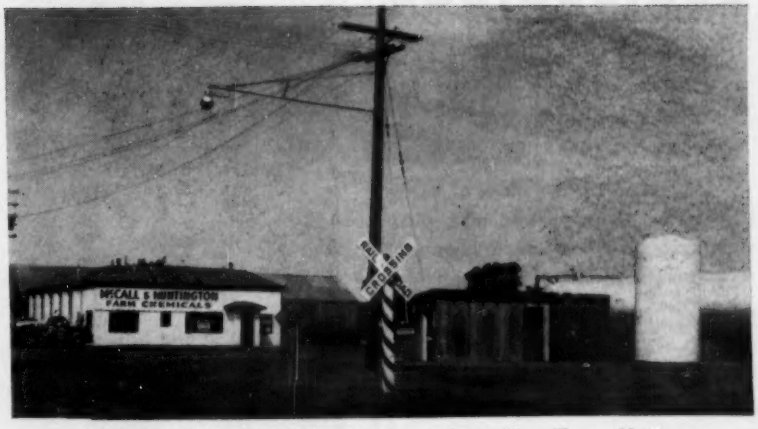
the Northwest, will permit fall ammonia application to wheat, round out a more uniform seasonal pattern.

Ammonia Link: As Curll views his organization, Chemical Enterprises "provides the necessary link between the ammonia producer and the farmer-consumer." For although a dozen or more large chemical makers turn out the material, only a couple sell under their tradename through distributors and dealers. In contrast with these, Chemical Enterprises, claims Curll, is unique in dealing directly with the farmers on a nationwide scale.

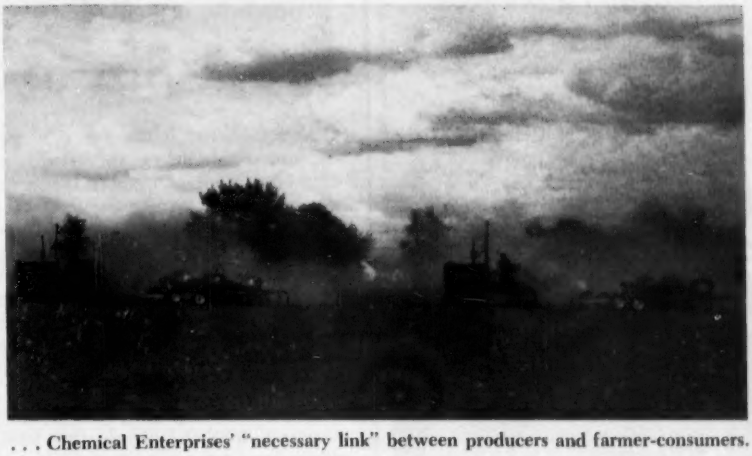
The precise relationship between Chemical Enterprises and its subsidiaries varies. Some affiliates are wholly owned, some such as Schrock, controlled through a substantial voting interest. Common link in every case is long-time ammonia and fertilizer man, Dan Curll. As president of Chemical Enterprises, he sits on the board of each affiliate.

Union Strength: From his driver's seat behind the Chemical Enterprise team, Curll views these advantages accruing to his affiliates as a result of shifting from their former localized operations:

- As members of the larger CE organization, they can afford the engineering studies and surveys essential to making distribution methods more efficient.
- They benefit from the combined brains of a central directing board long in management, finance and marketing experience.
- They exchange working knowledge of each other's technical methods and equipment improvements. For instances, techniques developed in far-different territories such as Louisiana and Texas, have been adapted to improve operations in the newer CE territory in the Northwest.
- They lessen the risks of season-to-season uncertainty inherent in dealing with farmer consumers. For example, should one area be adversely affected by poor weather, insects or disease, purchase commitments can be transferred to unaffected regions.
- They are able, having access to a larger common inventory, to greatly reduce their own stockpiles.
- They are able to arrange, when needed, long-term loans for themselves —longer than might be possible on a purely local basis.
- They receive assistance in their endless chore of "selling" ammonia to the farmer. This is particularly important for, as Curll points out, although the benefits of ammonia fertilizing are well established, for some intangible reason, the product requires a certain amount of continuous sales effort.
- Through the diversified purchase pattern made possible by national-scale operations, they can purchase from the most favorably located manufacturing plants. Result: a minimum of the highly important freight costs.



EMPHASIS ON AMMONIA: Stations such as this will provide . . .



. . . Chemical Enterprises' "necessary link" between producers and farmer-consumers.

What Next? Curll considers his company as specifically tailored to fill a service gap between the ammonia makers and the farmer. He is convinced that the Chemical Enterprise network is the best solution to the poser of distributing a low-price chemical over a large area to cost-conscious customers.

Concerning future plans, Curll is understandably enthusiastic, says Chemical Enterprises will continue to expand along three routes:

- Acquisition of more local operators, through purchase, exchange of stock or other means.
- Expansion of current affiliates' activities and plugging up present local territory service gaps.
- Establishing of new CE units in sections not now served by distributors. In this connection, Curll has great confidence in the spreading use of ammonia to previously unserved areas.

His confidence would seem to be well-founded. Latest estimates of U.S. direct application ammonia consumption point to a near-term 300,000-tons/year rate (up from last year's 217,000 tons).

It's precisely between the swollen producing capacities and the swelling faarm demand that Curll sees his company taking its place. As he phrases the situation:

"The growing need for agricultural supplies – fertilizers, insecticides and herbicides—and the increased ability of industry to produce them combine to present a major challenge to establish a sound method of distribution."

DUPONT'S Kinsman and 3-M's Crockett: "It's different" and self-training.

From Sin to Success

Question: What is the surest way to capture a salesman's attention?

Scattered as opinions may be on this question, one sure-hit method is to show him the way to bulge his order book. Next week, some 300 chemical salesmen and executives are expected to journey to New York, enticed by just such an attention-getter. The cynosure: The Third Chemical Sales Clinic of the Salesmen s Assn. of the American Chemical Industry, Oct. 11.

Almost as if a record of two past successes weren't enough, this year's clinic, in mapping it meatiest session yet, will present some advanced thoughts of recognized industry leaders. Charged with pointing up the facts that fatten a salesman's paycheck are high-ranking executives from some of the largest firms in the chemical industry. All will divulge their insight on the general theme, "Selling Chemicals Today."

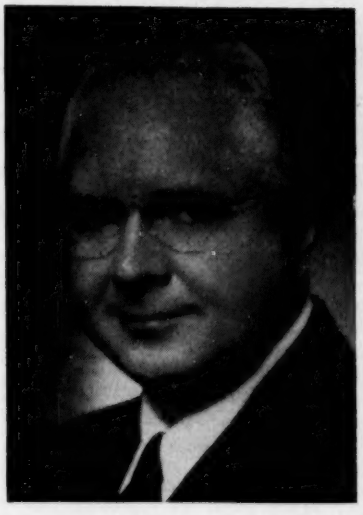
Unlike its two forerunners, which dealt more with the theoretical side of sales, this meeting will veer to a more practical tack. Beamed to the individual salesman and sales executive, the clinic's program ranges from a purchasing agent's appraisal of the "Sins of a Salesman" to a vice-president's view on "Using the Tools of Selling."

Here, the program speakers adduce, are some paths chemical salesmen should explore as aids to selling:

• Encouraging motivation. "Success Through Selling," avers Ernest Hart, executive vice-president, Food Machinery and Chemical Corp., is an opportunity the salesman always has. By the very nature of his position he can "learn all the facets of his industry and his company . . . of his customers' requirements, and the end uses his own product appears in. He learns of competitive activity in his own and other fields . . . and has a unique opportunity to grow . . . not accorded to other employees. . . . The salesman's access to management, research, production . . . and other departments . . . offers unusual opportunity to develop complete understanding of his company's operations. . . . Properly embraced, they lead to opportunities for major contributions to the company's success and . . . to the salesman's own success. . . . It's a fact that a majority of industry executives have reached the top via the sales route."

• Broadening use of selling assets. Proposing a broad meaning for the term "selling tool," Ray Dinsmore, vice-president, Goodyear Tire and Rubber Co., points out the need to supplement such tools as quality and price with the "warmth and color of human relationships involved." Differing from other industries, chemical products frequently "lack eye appeal or visual means of distinguishing the good, bad and indifferent." "This . . . makes selling more difficult . . . but appeals to people of outstanding intelligence. The possibilities" of using "an imaginative grasp of the customer's situation and the best approaches for earning his goodwill and confidence are always present." Such considerations, Dinsmore believes, greatly increase the effectiveness of "Using the Tools of Selling," the title of his talk.

• Obtaining a fresh perspective.



FOOD MACHINERY'S Hart, Goodyear's Dinsmore: Motivation and broad sales tools.

More and more, asserts George Polzer, General Purchasing Agent for American Cyanamid's chemical raw materials, industry is realizing that the "buyer and seller despite the opposite-ness of their jobs, have much in common . . . sit on two sides of the same desk." Watching salesmen operate day-in and day-out, the purchasing agent can readily note salesmen's traits that hinder and hamper the purchasing-sales relationship. In spotlighting the "Sins of a Salesman" to the conference, Polzer will probe not only those of commission but also those of omission. "Errors of omission do not come to light so vividly as those of commission. (I have yet to have a sales executive ask me what his salesmen neglected to do) . . . There are certain things he is not doing that the purchasing man desires . . . and that would improve the relationship immensely." By holding up the mirror to the "sins" of a salesman, and to those of the agent, too, reasons Polzer, both can gain.

CYANAMID'S Polzer: Block to understanding; "sins" of sellers and buyers.

• Improving job know-how. Sales training never stops. That's one view J. S. "Dave" Crockett, Director of Sales Training for Minnesota Mining and Mfg., plans to put to clinic attenders. Touching chiefly upon training a company can never provide, that of self-training, Crockett observes "improvement must stem from a keen desire . . . of the salesman . . . to do a better job. Self-training calls for four ingredients: attitude, knowledge, habits and skill. Quality of ingredient is the determining factor in the success a salesman can attain. Upgrading that quality is the core of the self-training program. Remaining alert to this need will enable the salesman to setup a practical self-training program."

Rounding out the full-day program on current chemical selling is the address by J. Warren Kinsman, vice-president Du Pont. Its title: "It's Different Today, and It's Gonna Be Different."

Following past practice, SAACI intends to publish the verbatim transcript of the entire proceedings, distribute it to those registered. But for the salesman who can't make it, extra copies will be available. And while he'll miss the chance to ask questions and take part, the record will set down some ways, means and goals of "selling chemicals today."

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Hub of Distribution

To the "home of the bean and the cod," distribution men from all sections of American industry will trek soon to take part in the 26th annual Boston Conference on Distribution, Oct. 18-19.

Sponsored by the Boston Chamber of Commerce, the Retail Trade Board, and leading colleges, the internationally recognized conference plans one of its most crucial sessions ever. With easy-sell markets now a memory, the registrants will seek insight into methods of more efficient distribution.

To provide the attenders with just this information, the meeting will present three panel discussions and a series of lectures by recognized distribution authorities. Some of the agenda of interest especially to chemical men:

"Consumer Motivation in Buying," one of the panel discussions, will delve into mounting interest in psychological investigation of consumer purchasing and motivation and its application to sales.

Editors of *Business Week;* Rensis Likert, director, Institute for Social Research, University of Michigan; and Wallace H. Wulfeck, vice-president and chairman, executive committee, William Esty Advertising Agency, make up the panel.

New Sales from New and Better Products, another panel, will be conducted by officials of business publications; James B. Kobak, partner, J. K. Lasser Co.; and Frank W. Mansfield, director, market research, Sylvania Electric Products Co. They will pinpoint the sales improvement resulting from new or improved products.

Lectures: Besides the panel discussions, some 16 lectures dealing with various phases of distribution will include two by chemical industry men:

- Six Avenues of Profitable Wholesale Distribution. Herman Nolen, vice-president, McKesson & Robbins, Inc.
- Plastics Industry—A New Star in Distribution. H. K. Intemann, vice-president and sales manager, Bakelite.
- What is Competition? Robert Austin, Professor, Harvard Graduate School of Business Administration.
- The Other Half of Marketing (Cost). P. D. Converse, head, Dept. of Marketing, University of Illinois.
- Executive Training in the Field

Powder Blow-Lift

EFFICIENT METHODS of materials handling are always worth a close look, regardless of the particular industry from which they originate. That's one reason why chemical companies may well take a look at this novel British truck for carting and unloading flour. Capable of hauling 12½ tons of flour, the Leyland truck is equipped with a special blower-discharge system. With this equipment, operated off the truck engine, the entire load can be blown up into storage bins as much as 100 ft. high and at a rate of 20 tons/hour. Applications in the chemical industry may exist where handling entails powdery materials.

CHEMICAL WEEK • ADVERTISERS INDEX

OCTOBER 9, 1954

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of Distribution. Frank S. Cellier, Director of Education and Executive Development, Sears, Roebuck & Co.

• American Business and World Trade. Marshall M. Smith, Deputy Assistant Secretary for International Affairs, U.S. Dept. of Commerce.

• American Know-Why and World Economic Development. Dwayne Orton, Educational Consultant to the International Business Machines Corp.

•

Vinyl Film Promotion: Encouraged by successful returns in its campaign to vend vinyl film by means of a "quality standard" (*CW, May 1, p. 40*), film makers are now driving for the support of the fabricator. Sponsored by the Vinyl Film Educational Committee of the Society of the Plastics Industry, the plan takes two directions: one is aimed at encouraging fabricators to use only "quality standard" vinyl film; the other is to urge the fabricator to help the retailer cash in on consumer acceptance of the standard. With this goal in mind, fabricators are receiving a "promotion kit" containing resumes of campaign activity to date, a color film strip, consumer and trade publicity, and a retail sales handbook. And leaving no angle uncovered, the SPI is furnishing fabricators with a six-point, spelled-out plan to disseminate the promotional literature.

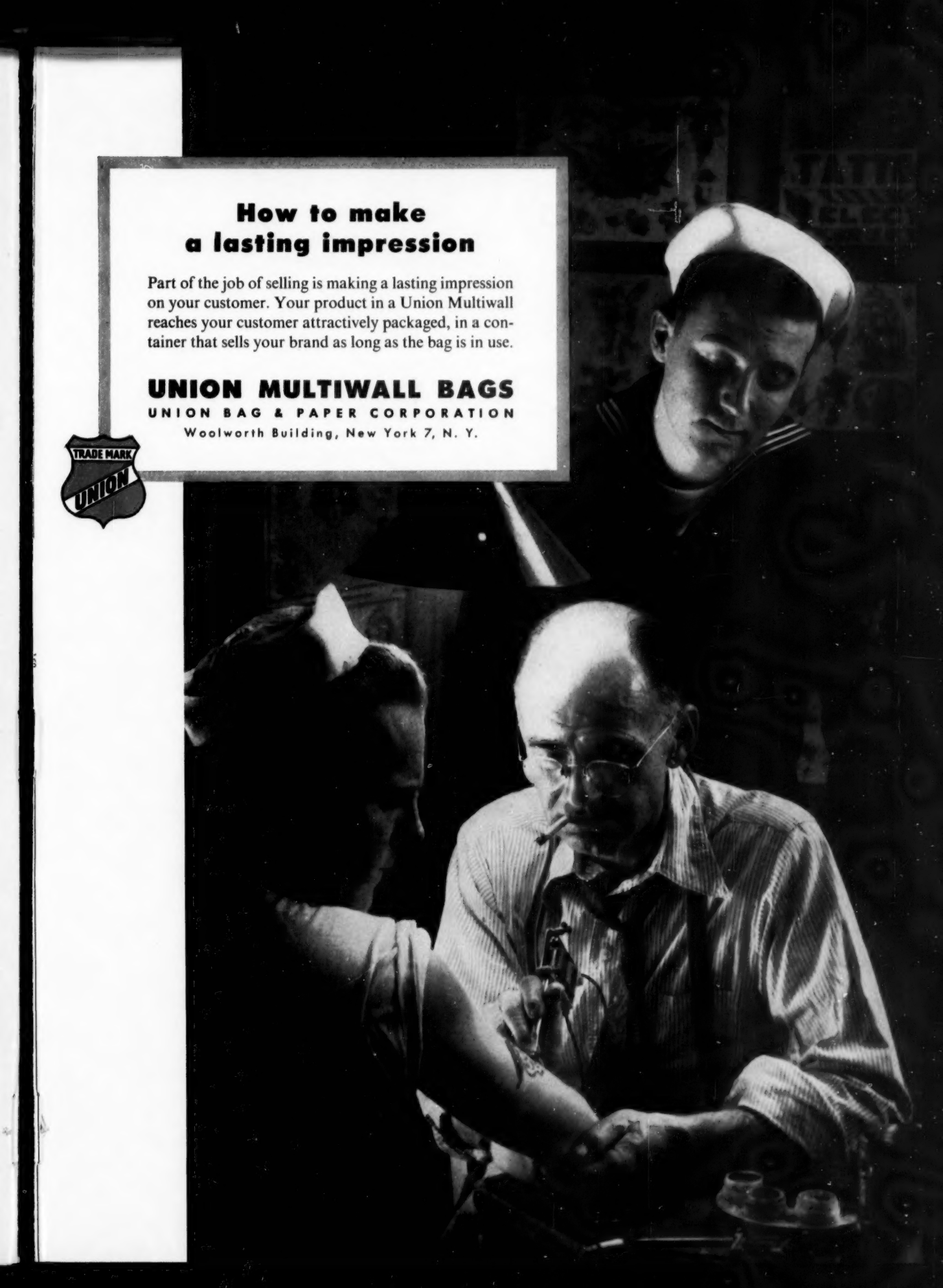
•

Paper Probing: Paper technology took a step forward recently with the opening of a new paper development and application laboratory by American Cyanamid. Located in Chicago, the center will work closely with the paper industry in extending application of paper. According to company officials, "the laboratory will try to approximate mill conditions" in devising new paper chemicals. Previously Cyanamid maintained development operations at its Stamford, Conn., research center.

•

Ready Reference: Organic Solvents and Chemicals—a 75-page catalog of common solvents. Specifications, solubility, end use, and packaging data are included. The booklet also contains tables for gauging drum content, denatured alcohol formulas, and temperature conversion charts. Chemical Solvents Inc., Newark, N.J.

• Plastics and Synthetics in Industry—survey providing data on the industries that consume plastics, types and quantities used, consumption rates, purchasing influences, and how the factories receive information. Research Manager, Factory, New York, N.Y.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Potassium Bifluoride
Sodium Bifluoride

ALKALI FLUOBORATES
Ammonium Fluoborate
Potassium Fluoborate
Sodium Fluoborate

ALKALI FLUORIDES
Ammonium Fluoride
Potassium Fluoride, Cryst. & Anhyd.
Sodium Fluoride, Tech.
Sodium Fluoride, Reagent

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Potassium Ferric Fluoride
Potassium Titanium Fluoride
Potassium Zirconium Fluoride
Sodium Zirconium Fluoride
Sodium Silico Fluoride
Potassium Aluminum Fluoride

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Aluminum Fluoride, Crystal
Antimony Trifluoride
Antimony Pentafluoride
Barium Fluoride
Cadmium Fluoride
Calcium Fluoride
Chromium Trifluoride
Cupric Fluoride
Ferric Fluoride
Lead Tetrafluoride
Magnesium Fluoride (Not Optical Grade)
Mercuric Fluoride
Manganese Trifluoride
Molybdenum Hexafluoride
Nickelous Fluoride
Selenium Hexafluoride
Silver Difluoride
Strontium Fluoride
Titanium Tetrafluoride
Tellurium Hexafluoride
Tungsten Hexafluoride
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Zirconium Tetrafluoride

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Boron Fluoride Ammonia Complex
Boron Fluoride Diacetic Acid Complex
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Boron Fluoride Dihydrate
Boron Fluoride Piperidine Complex
Boron Fluoride Ethyl "Cellosolve" Complex
Boron Fluoride Hexamethylene-tetramine Complex
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Boron Fluoride Para-cresol Complex
Boron Fluoride Triethanolamine Complex
Boron Fluoride Urea Complex
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Trifluoromethane (Fluoroform)	CHF_3
Monochlorotrifluoromethane	$CClF_3$

Fluoroethanes

Difluoroethane (Ethylidene fluoride)	$CH_3 \cdot CHF_2$
Difluoromonochloroethane	$CH_3 \cdot CClF_2$
Tetrachlorodifluoroethane	$CCl_3 \cdot CClF_2$
Monochlorotrifluoroethane	$CH_2Cl \cdot CF_3$
Trichlorotrifluoroethanes	$CCl_2F \cdot CClF_2$ $CCl_3 \cdot CF_3$
Dichlorotetrafluoroethanes	$CClF_2 \cdot CClF_2$ $CCl_2F \cdot CF_3$
Monochloropentafluoroethane	$CClF_2 \cdot CF_3$

Fluoroethylenes

Difluoroethylene (Vinylidene fluoride)	$CH_2 = CF_2$
Dichlorodifluoroethylene	$CCl_2 = CF_2$
Trifluorochloroethylene	$CClF = CF_2$
Monochlorodifluoroethylene	$CHCl = CF_2$

Fluorobromoethanes

Dibromodifluoroethane	$CH_2Br \cdot CBrF_2$

Fluorinated Acetic Acids and Anhydrides

Dichloromonofluoroacetic acid and anhydride	CCl_2FCOOH and $(CCl_2FCO)_2O$
Monochlorodifluoroacetic acid and anhydride	$CClF_2COOH$ and $(CClF_2CO)_2O$

Fluorinated Acetones

Tetrachlorodifluoroacetone	$CCl_2F \cdot CO \cdot CCl_2F$
Trichlorotrifluoroacetone	$CCl_2F \cdot CO \cdot CClF_2$
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